



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

### Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

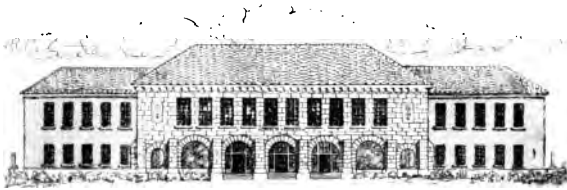
We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

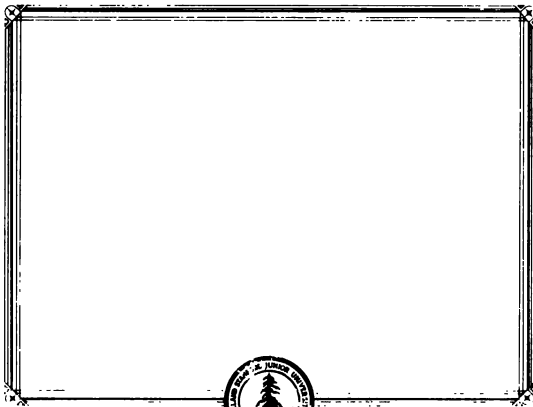
### About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>





SCHOOL OF EDUCATION  
LIBRARY



STANFORD UNIVERSITY  
LIBRARIES

# The Indiana State Board of Education

## EDUCATIONAL BULLETIN

Vocational Series No. 15

Indiana Survey Series No. 3

---

\_\_\_\_\_

REPORT OF THE  
RICHMOND, INDIANA, SURVEY FOR  
VOCATIONAL EDUCATION

\_\_\_\_\_

Conducted Co-operatively by the Indiana State Board of  
Education, the Board of Education of Rich-  
mond and Indiana University

\_\_\_\_\_

ROBERT J. LEONARD, Director  
Professor Vocational Education, Indiana University

INDIANAPOLIS  
December 1, 1916

W



**Copyright 1916**  
**By Robert J. Leonard**

**DEPARTMENT OF PUBLIC INSTRUCTION  
VOCATIONAL DIVISION**

**CHARLES A. GREATHOUSE**  
*State Superintendent of Public Instruction.*

**W. F. BOOK**  
*Deputy Superintendent in Charge of Vocational Education.*

**Z. M. SMITH**  
*Special Agent in Charge of Agricultural Education.*

**ADELAIDE STEELE BAYLOR**  
*Special Agent to Supervise Domestic Science.*

**CHARLES H. WINSLOW**  
*Special Agent for Vocational Research.*

30,000,000

270,000

100,000

647985

APPROVED BY  
STATE BOARD OF EDUCATION

FORT WAYNE PRINTING COMPANY  
CONTRACTORS FOR STATE PRINTING AND BINDING  
1907



## FOREWORD TO SURVEY SERIES

In February, 1913, the Indiana Vocational Education Law—recommended by the teachers and superintendents of the state and by the Special Commission on Industrial Education appointed two years previously to investigate Indiana's need for vocational training—was passed by the Legislature. A Deputy State Superintendent in charge of vocational work, and a Special Agent to supervise agricultural education were appointed by the State Board of Education the following May. As the sections of the law providing for state-aided vocational schools did not go into effect until September of the following year, the first year was devoted to a study of the problems involved in the organization and conduct of the special vocational schools to be established, and to developing the instruction in industrial arts, agriculture and domestic science, which the law prescribed should be taught in all the schools of the state as a part of their regular course of instruction.

During the first year vocational schools in all parts of the country were visited and the experiments made in vocational education in different cities and states carefully studied. One conviction which this study of the problem left in our minds was that most of the cities and states which had organized vocational instruction were, in reality, not stressing the occupations in which the majority of their people were engaged and that all the vocational schools visited seemed more or less handicapped by the fact that no careful analyses of the major industries had been made to provide the data needed to make an effective course of study. We also became keenly aware of the fact that the Indiana situation presented some problems that were distinctly unique and new. In other words, we began to see that a careful and systematic study of Indiana's specific needs for vocational training would have to be made and the more important industries of the state analyzed before the problem of providing vocational training for the people of the state could be effectively and economically solved. As a result steps were immediately taken and plans formulated for making such vocational surveys.

In February, 1914, W. L. Bryan, President of Indiana University, stated to Superintendent Chas. A. Greathouse and the State Director of Vocational Education that Indiana University would be willing to co-operate with the state in the development of

the vocational work by providing, free of charge for at least one year, the services of an expert in Industry, whom he desired should work on such problem as the State Board of Education might direct. In September, R. J. Leonard came to Indiana University as Professor of Vocational Education and, in conformity with President Leonard's plan, was loaned to the state for the year. During this year Leonard, working in co-operation with the Department of Vocational Education, made a study of the people of Indiana and their occupations and organized all the facts which would indicate a plan of emphasis in developing vocational education in the state. This study was published by Indiana University in 1915, and constitutes the first Indiana study for purposes of vocational education. In December, 1914, the State Board of Vocational Education made arrangements with the Superintendent and Board of Education at Hammond, to have Leonard make a detailed study of the industries at Hammond, with a view of ascertaining the facts pertaining to the industries and the schools, which would enable us to make recommendations for developing vocational instruction at Hammond. This study was published by the Hammond Board of Education in April, 1915, and constitutes the second purpose of vocational education made in the state.

Other minor studies of the needs of teachers of the arts subject in the regular schools and the need for instruction in particular communities were made by the Department during this year. Indiana University gave the full-time service of one woman (paying all her salary and expenses) to help supervise the domestic science in the regular schools. The Indiana State Normal School did the same. Purdue University provided the services of a man to help supervise the work in domestic science and to help supervise the work in agriculture.

In April, 1915, Professor R. J. Leonard was invited to Richmond, Indiana, with Superintendent J. T. Giles and the Board of Education, relative to making a vocational study of Richmond. On May 6, 1915, Superintendent Giles was authorized by the Richmond Board of Education to extend an invitation to Professor Leonard to direct a vocational survey of Richmond, and preliminary arrangements for making the survey during May and June. In June, 1915, Mr. P. A. Reid, an

State Board of Education and also a member of the Richmond School Board asked the State Board of Education to co-operate in making the Richmond Survey, and urged that some financial aid be given for this work, explaining that unless such assistance could be given no adequate survey could be made.

At the September meeting of the State Board of Education a tentative plan for making a number of typical state surveys for purposes of vocational education was presented to the State Board by W. F. Book, State Director of Vocational Education. By November 30th, a plan for conducting a joint survey at Richmond was agreed upon, \$1,000 voted for the work and the State Director of Vocational Education instructed to draw up an agreement between the State Board of Education, Indiana University and the Board of Education of Richmond for making a joint vocational survey at Richmond. On December 9th, this agreement was ratified by the State Board of Education and the money appropriated for the Richmond Survey.

This Survey was in charge of Professor R. J. Leonard and a General Survey Committee specially provided for in the agreement made with Indiana University and the Board of Education of Richmond. To Professor Leonard who directed the work of the Richmond Survey, to Indiana University, whose keen interest in the development of the vocational work throughout the state prompted it to contribute the services of the Director, and to the members of the General Survey Committee who gave so freely of their time and energy during the conduct of the Richmond Survey, the State Board of Education is deeply indebted for material assistance, expert service and a spirit of co-operation whose value to the state it would be hard to estimate.

Before the arrangements for the Richmond Survey had been completed arrangements for making other vocational surveys had been made. On November 30, 1915, a tentative plan for making a survey of the city of Madison and Jefferson County, to be conducted jointly by the State Board of Education, the Madison City and Jefferson County Boards of Education and Hanover College were presented to the State Board by W. F. Book, State Director of Vocational Education. The general plan for conducting this survey was approved and the survey authorized. Money was also voted and Mr. Book was instructed to draw up an agreement for conducting this survey.

On November 23rd, the Evansville Board of Education voted to invite the State Board of Education "to make a survey of the

City of Evansville, looking towards the establishment of a vocational school." Preliminary arrangements for the survey and for securing a suitable man to direct and conduct the state program for vocational research contemplated were made during December. On January 11th, 1916, the State Board of Education approved a tentative plan for conducting the survey of Evansville, and appropriated \$2,800.00 for the work. The Board also instructed the State Director of Vocational Education to sign an agreement with the local Board of Education regarding the Evansville Survey as soon as a suitable director was secured. On January 27th, the State Board of Education adopted the recommendation of State Superintendent Chas. H. House, and W. F. Book, State Director of Vocational Education, and elected Mr. Chas. H. Winslow as State Director of Vocational Research, and directed Mr. Winslow and Mr. Book to prepare and report a plan for conducting the various state surveys contemplated. This plan not only defined the authority of the State Board of Education, the State Director of Vocational Education and State Director of Vocational Research, but also made provisions for the necessary administrative machinery at state and local levels required to carry on all state vocational surveys. Among other things this plan provided for a permanent State Survey Committee, to have control of the several surveys to be made. This Committee was given authority to determine the method and scope of each survey and was charged with the duty of making complete and detailed recommendations to the state and local boards of education for organizing and developing vocational work in each community where a survey was to be made.

The field work on the Evansville, Madison City and Madison County Surveys was done during the spring and early summer of 1916. During May and June the State Director of Vocational Education, upon the invitation of Superintendent J. G. Cline, made arrangements with the Indianapolis Board of School Commissioners for making a vocational survey of Indianapolis. An agreement for conducting the Indianapolis survey was signed on June 20th, 1916, and the field work on the Indianapolis survey began on July 5th. Reports on all these surveys will be prepared during the next three months by the State Board of Education.

*Co-operation of National Society for the Promotion of Vocational Education.*—As soon as a state program for vocational research had been definitely planned and decided upon and a State Director for Vocational Research secured, the National

for the Promotion of Industrial Education was invited to hold its Tenth Annual Meeting in Indianapolis, and urged to take a prominent part in making the Indiana surveys. The opportunity of considering at its next annual convention the problem of vocational training from a state angle and the opportunity of co-operating in a state survey caused the National Society for the Promotion of Industrial Education to decline the invitations extended to it by a number of other prominent cities throughout the country and to decide to hold its Tenth Annual Convention in Indianapolis.

The Secretary of the National Society and two members of its Survey Committee, C. R. Richards and C. A. Prosser, were appointed on the Indiana State Survey Committee, Dr. Prosser being made Chairman of the Committee. In addition to the personal service which these gentlemen have given, the National Society has contributed much expert advice and assistance by calling upon its entire membership for help. To the National Society for the Promotion of Industrial Education, and to C. A. Prosser, Chairman of the State Survey Committee and C. R. Richards and Alvin E. Dodd, who have given so freely of their time and energy to the Indiana Surveys, the State Board of Education and the State of Indiana are deeply indebted for expert service in planning and helping direct the work of the Evansville, Madison and Indianapolis Surveys. We are also specially indebted to G. I. Christie, of Purdue University, and W. A. Millis, President of Hanover College, for their co-operation and personal service in conducting the Jefferson County Survey. Without their aid and assistance this survey could not have been made. Special acknowledgments are also due to all other members of our State Survey Committee, particularly to Mr. Chas. H. Winslow, State Director of Vocational Research, under whose wise leadership and personal direction the Madison, Evansville and Indianapolis Surveys were made.

*Purpose of the Indiana Surveys.*—The aim of all these Indiana Surveys, as conceived by the Vocational Department and State Board of Education, was to ascertain from a study of the industries of a particular community the facts that would be needed to outline an efficient and economic program of vocational training for that community, and to ascertain from a study of the work being done in the public, private and parochial schools of the community how far the vocational needs of that community were



already being met by existing agencies. The ultimate was to suggest a definite program for organizing and conducting vocational education in the particular city or district covered by the survey. It is hoped that by selecting a number of communities throughout the state, some definite help might be obtained for solving the problem of providing a comprehensive scheme of vocational training for the state as a whole.

CHARLES A. GREATHOUSE,

*President Indiana State Board of Education*

WILLIAM F. BOOK,

*State Director of Vocational Education*

# TABLE OF CONTENTS

	PAGE
List of Tables.....	x
List of Illustrations.....	xi

## PART ONE

### The Survey and Richmond

CHAPTER		
I.	The Survey.....	3
II.	The City of Richmond.....	15

## PART TWO

### Occupational Information

III.	Overview of Industrial Employment.....	23
IV.	Industrial Employment: Automobile Manufacturing.....	39
V.	Industrial Employment: Wire Fence Manufacturing.....	53
VI.	Industrial Employment: Lawn Mower Manufacturing...	67
VII.	Industrial Employment: Agricultural Implement Manu- facturing.....	81
VIII.	Industrial Employment: Railroad Repairing, Machine Tool Manufacturing and Other Metal Industries.....	97
IX.	Industrial Employment: Musical Instrument, Casket and Furniture Manufacturing....	131
X.	Industrial Employment: Job and Newspaper Printing....	163
XI.	Industrial Employment: Building Construction.....	177
XII.	Industrial Employment: Underwear, Glove and Working- men's Wear Manufacturing...	193
XIII.	Industrial Employment: Ladies Tailoring, Dressmaking and General Sewing.....	233
XIV.	Industrial Employment: Dry Cleaning, Dyeing and Hat Cleaning.....	239
XV.	Industrial Employment: The Laundry.....	257
XVI.	Overview of Commercial Employment.....	273
XVII.	Commercial Employment: Mercantile Traffic.....	277
XVIII.	Commercial Employment: Mercantile Sales.....	307
XIX.	Commercial Employment: Telephone Service.....	369
XX.	Commercial Employment: Office Service.....	385
XXI.	Household Employment: The Housewife.....	405
XXII.	Household Employment: The Graduate, Practical and Home Nurse.....	429
XXIII.	Household Employment: Household Service.....	449
XXIV.	Juvenile Employment.....	459
XXV.	Home and School Gardening.....	471

## PART THREE

### Present Provisions for Vocational Education and Survey Recommendations

#### CHAPTER

- XXVI. The Schools and Children of Richmond.....
- XXVII. Present Provisions for Industrial, Commercial and Home Art Instruction.....
- XXVIII. Survey Committee Recommendations for Vocational Education, Subsequent Investigations and Legislation...

## PART FOUR

### Methods of the Survey

- XXIX. Methods of the Survey and Forms Used.....

## LIST OF TABLES

#### NUMBER

- 1. Growth of Richmond and Other Indiana Cities, 1900-1910.
- 2. Composition of Population of Richmond and Five Other Indiana Cities, 1910. ....
- 3. Illiteracy in Richmond and Other Indiana Cities in 1910...
- 4. Actual and Percentage of Increase of Workers in Manufacturing Plants in Richmond and Other Indiana Cities, 1904-1909
- 5. Percentage of Total Inhabitants Employed in Manufacturing Establishments in Richmond and Other Cities, Derived from Number in Industries in 1909 and Population in 1910. ....
- 6. Total Number of Workers Employed March 1, 1916, in Industries Analyzed by the Survey. (Office and Sales Force Excluded)
- 7. Place of Birth of 457 Workers in Manufacturing Establishments
- 8. Age of 419 Workers in Manufacturing Establishments. ....
- 9. Conjugal Condition of 424 Workers in Manufacturing Establishments.....
- 10. Schools Attended and Grade Completed by 377 Workers in Manufacturing Establishments.....
- 11. Age Upon Leaving School of 413 Workers in Manufacturing Establishments.....
- 12. Hours of Work on Week Days and Saturdays of 423 Workers in Manufacturing Establishments.....
- 13. Weekly Earnings of 278 Workers in Manufacturing Establishments.....
- 14. Number of Years of Experience in Present Occupation of Workers in Manufacturing Establishments.....
- 15. Number of Occupations Other than the Present Followed by Workers in Manufacturing Establishments.....
- 16. Number of Workers Among 124 Employed in Manufacturing Establishments Who Have Taken Specified Courses Since Leaving School.....

NUMBER	PAGE
17. Number of Occupations Analyzed and Workers Employed in Commercial Pursuits Studied by the Survey.....	275
18. Number of Families of Specified Size per Number of Rooms Occupied.....	420
19. Number of Families of Specified Type and Size.....	423
20. Number of Families According to Type and Number of Rooms Occupied.....	423
21. Number of Families According to Type of Family and Education of Housewife.....	424
22. Occupations and Number Employed in Household Service.....	450
23. Number of Boys and Girls Leaving at Each Age and School Grade.....	460
24. Occupations of Fathers and Mothers of Permit Boys and Girls.....	461
25. Vacant Lot and Back Yard Garden Space in Five Districts.....	478
26. Occupation of Elementary School Children During Vacation and After School.....	490
27. Available Home Garden Space Reported by the Elementary School Children.....	492
28. Number of Pupils Over, Normal and Under Age by Grade and Sex.....	503
29. Present Place in the Grades of 13 and 14 Year Old Boys and Girls.....	504
30. Industrial Arts for Elementary Schools.....	508, 509
31. Fine Arts for Elementary Schools.....	510
32. Number of Boys Taking Shop Courses Having Each Number of Credit Hours.....	518
33. Number of Boys and Girls Taking Commercial Courses Having Each Number of Credit Hours.....	524
34. Number of Semester Courses of Each Commercial Subject Taken by Eight Girls and Three Boys Not Going to College.....	525
35. Number of Semester Courses of Each Commercial Subject Taken by Nine Girls and Nine Boys Going to College.....	527
36. Number of Girls Taking Household Arts Courses Having Each Number of Credit Hours.....	531
37. Night School Industrial Courses for Men.....	536, 537
38. Night School Commercial Courses for Men and Women.....	538
39. Night School Household Arts Courses for Women.....	539
40. Night School General Courses for Men and Women.....	540, 541
41. Night School Miscellaneous Courses for Men and Women.....	543

## LIST OF ILLUSTRATIONS

1. Transportation Map—Richmond and Vicinity.....	17
2. Stripped of Body, Top and Fenders, the Modern Automobile is a Series of Mechanical Units, all Perfectly Co-ordinated.....	41
3. Beauty of Design, as Well as Mechanical Perfection, is Essential in Automobile Construction.....	41
4. Strand and Stay Wires Entering the Loom. The Streaked Line Cutting the Picture is the Stay Wire.....	54
5. Wire Being Drawn into the Fence Weaving Machine. The Hollow Drum at the Rear Bears Strand Wire; the Reels, Upright and Stay Wire.....	55
6. The Completed Wire Fence Passing Off the "Pull Up" Drum....	56

# NUMBER

7. Looping and Twisting. Starting from the Base of the Picture the Center, Note the Various Stages in the Twisting Process.
8. Reeling the Woven Wire.....
9. The Construction of a Lawn Mower at First Glance Appears Very Simple, But on Analysis is Found To Be Made Up of a Large Number of Parts, Each of Which Performs a Certain Definite Service.....
10. One of the Richmond Made Grain Drills in Use on the Level Fields of the Northwest.....
11. Erecting Silage Cutters.....
12. A Universally Adjustable Multiple Drill with Twelve One- and One-quarter-inch Spindles.....
13. A Universally Adjustable Multiple Drill with Direct Connecting Motor.....
14. A Modern Foundry Building with Adequate Provision for Ventilation.....
15. The Interior of a Modern Moulding Room Showing Adequate Provisions for Light and Ventilation.....
16. A Jacobian Grand Piano.....
17. An Upright Piano of Substantial Design. The Product of Scores of Workers from a Great Variety of Trades.....
18. The Phonograph—The Latest and Most Perfect Sound Reproducing Instrument. Its Perfection Has Involved the Use of New Materials and the Development of New Processes and Trades.....
19. Double Automatic Cut-off Saws.....
20. Edge Glueing Machine.....
21. Ivory Laying Machines.....
22. Key Scraping.....
23. Key Sawing.....
24. Regulating Piano Action.....
25. Inspecting Piano Player Mechanism.....
26. Grand Piano Fly Finishing.....
27. Regulating Piano Action.....
28. Installing Piano Action.....
29. Marking Music Rolls.....
30. Cutting Master Patterns for Music Rolls.....
31. Music Roll Perforating Machines.....
32. Glueing Bellows for Player Pianos.....
33. A Modern, Well Lighted, Newspaper Composing Room.....
34. A Newspaper Stereotyping Room.....
35. A Modern Newspaper Press.....
36. The Oldest School House in Wayne County. An Interesting Example of Building Construction of Almost a Century Ago, When Specialized Building Trades Were Unknown.....
37. A Modern Building, of Which This Richmond School is an Example, Requires Workers from a Great Variety of the Building and Allied Trades.....
38. Power Sewing Machine Operating in a Glove Factory.....
39. Washing Machines, Extractor and Gasoline Pump.....
40. A Modern Steam Press.....

NUMBER	PAGE
41. Dry Cleaning Must Be Carried on in a Fire Proof Building as Illustrated by the Above Concrete Structure.....	241
42. Modern Auto Busses for Freight and Passengers Radiate from Richmond to All Parts of Wayne County.....	273
43. The Modern Telephone Office is Equipped with All Modern Conveniences. Note the Automatic Telephone in the Center of the Picture.....	369
44. The Operating Room with the Automatic System Only. Six Operators are Required. They Put Through Farm and Long Distance Calls.....	372
45. With the Automatic Telephone System the Connections are Made Without an Operator, as Seen to the Right in the Picture Above.	382
46. A Row of Substantial Residences Which Perennials Would Beautify.....	472
47. Residences Are Made More Attractive by Proper Landscape Gardening.....	473
48. A Successful Home Garden in Richmond.....	476
49. 1915 Map of Richmond, Indiana.....	477
50. A Poorly Kept Alley.....	487
51. A Well Kept Richmond Alley. This is a Credit to the City....	488



PART ONE  
THE SURVEY AND RICHMOND





## CHAPTER I

---

### THE SURVEY

#### Reasons for the Survey

*Evolution of the Richmond Schools.*—For the past twenty years the foremost thought of those interested in public education has been to so organize the schools and courses of study as to best aid the individual in successfully meeting the varying needs of community life. Those charged with the administration of the Richmond Schools have been conscious of the social and industrial changes in the community which have required a readjustment of the city schools in order that they might meet the needs of all the children of the city.

From 1855, when the first free public schools were opened in the city of Richmond, the school system has developed, stage by stage, into a complex organization with its various types of schools and departments all designed to provide the best possible training for living for each child of the community. To the traditional subjects of study in the elementary schools and the high school were added drawing in 1885, manual training in 1900 and later domestic science and domestic art.

*The life career motive.*—As early as 1912, there are indications noted from the printed course of study that one of the principal determinants in the education of the child beyond the sixth grade is the life career. At this date all seventh and eighth grade pupils in the entire city were grouped in a single school organized on the departmental plan, with special teachers for each of the different subjects; promotions were made by subject, and pupils elected either a language or work in the industrial arts dependent upon ability and interest. The high school course was also differentiated on the basis of interest and career, pupils being permitted to choose the academic, industrial or commercial course. To these the household arts course was added, and, during subsequent years, the point of view became clarified that the life career motive must be dominant during the period of secondary education.

*Vocational law stimulates interest.*—With the passage of the Vocational Education Law of 1913, great impetus was given to the idea of education for vocation in Richmond. With the reorganization of the State Board of Education, authorized by the new law, Governor Ralston appointed Mr. P. A. Reid, secretary of the Elliott Reid Company of Richmond, as a member of the board on the basis of his interest in vocational education. As a member of the Richmond Board of Education, Mr. Reid brought to the board his enthusiasm for the newer types of education which were then being focused upon the Richmond situation. Under the steady leadership of Superintendent J. T. Giles, supported by the new board of education, Richmond was brought to the realization that the schools bore a direct responsibility for the training of boys and girls for industry, commerce, agriculture, and the household arts which, as yet had been but lightly touched. The success of the high school department in offering whereby courses might be elected on the basis of future occupation, regardless of traditional requirements for secondary education, and the evening vocational school for tradesmen, mechanics, and workers and housewives, further stimulated the interest of the community for vocational education.

*What can Richmond do?*—All realized, however, in spite of the accomplishments of the schools, that the problem of providing vocational education adapted to the needs of Richmond was still practically unsolved. The size of the city proved to be the first real difficulty. The question "What specific vocational education can be offered with profit in a city of 25,000 population?", was uppermost in the minds of the Richmond authorities. Previous surveys afforded but little practical basis for the programs for education which they recommended for much larger cities with occupational pursuits and problems of an entirely different character. In order to answer this question and to map out a program for vocational education beyond the high school or college grade for Richmond, the community was enlisted in a concerted movement to make a detailed study of the productive life of the city and such phases of school organization as related to education for vocation.

### Organization of the Survey

*The survey authorized.*—On May 6, 1915, Superintendent J. T. Giles was authorized by the Richmond Board of Education to conduct a survey of the city of Richmond with a view to determining the needs of the community for vocational education.

extend an invitation to Professor Robert J. Leonard of Indiana University, to direct a vocational education survey of the city. Favorable consideration was given to this invitation and plans were formulated during May and June, 1915, indicating the general purpose, scope and method of the survey.

*Major co-operating agencies.*—It was felt by all that co-operation should be obtained from as many local and state agencies and institutions as possible in order that a sane and wise system of vocational education might be recommended to the city. During the fall of 1915, many meetings and conferences were held in Richmond and elsewhere, resulting in the working out of a practical scheme of co-operation and co-ordination between boards and institutions for the conduct of the Survey; the major co-operating agencies being the State Board of Education, Board of Education of Richmond, Richmond Commercial Club and Indiana University. The agreement between these agencies follows:

Agreement between Indiana University, Board of Education of Richmond, The Richmond Commercial Club and the State Board of Education for conducting a Vocational Survey of Richmond, Indiana.

1. The purpose of this survey is to determine what provisions should be made by the Board of Education of Richmond for organizing vocational schools and developing vocational education in Richmond. Such aspects of the industrial and commercial activities of the community and present school courses and organization as are necessary to answer this question shall be included in the study.

2. It is understood that this survey is to be conducted co-operatively by Indiana University, the Board of Education of Richmond, and the State Board of Education, and that the report is to be printed under the name of the Director. These facts are to be stated on the cover and title page of the printed report as follows:

Richmond, Indiana Vocational Survey conducted co-operatively by the Indiana State Board of Education, Board of Education of Richmond, and Indiana University.

3. In the organization of this survey, a Committee to be known as the Richmond Survey Committee shall be formed, con-

sisting of the Director of the Survey, the State Director of Vocational Education and the Superintendent of the Richmond schools, together with such other members as these three may determine. This Survey Committee shall determine the scope, character and methods of the survey, incorporating the minimum standards adopted by the State Board of Education through its Survey Committee or Special Agent. This committee shall prepare and pass upon the various forms and schedules to be used and shall also consider and approve the final report including recommendations made for developing vocational education in Richmond.

The Survey Committee shall also appoint a local committee consisting of representatives from among employers, employees, clubs, organizations, etc., who may be interested and helpful in the work of the survey.

4. The recommendations for vocational education to be formulated for the guidance of the Board of Education of Richmond shall be formulated by the Director of the survey, the State Director of Vocational Education and the Superintendent of the Richmond schools. These recommendations shall be submitted to the Survey Committee, the Board of Education of Richmond and the State Board of Education, for their approval. When so approved by the Board of Education of Richmond obligates itself to carry out the recommendations for vocational education made by the State Board of Education, through the above authorized agent as rapidly as conditions will permit.

5. It is agreed that Indiana University will furnish the services of the Director.

6. It is agreed that the Board of Education of Richmond will furnish the sum of Seven Hundred and Fifty Dollars expended as necessary in conducting this survey; also supply necessary stationery, stamps, printing and the services of a stenographer; also the services of certain teachers for field work. These services to be provided in accordance with such plan as may be in keeping with present rules and regulations and the interests and capacities of the teachers.

7. It is agreed that the Richmond Commercial Club will supply the necessary office space, office furniture, a telephone and the services of a stenographer when needed.

8. It is agreed that the State Board of Education will furnish a sum not to exceed One Thousand Dollars to be spent as necessary in the conduct of the survey, and also print and distribute, free of charge, five thousand copies of the printed report.

Signed by

Indiana University, W. L. Bryan, President.

Board of Education of Richmond, W. F. Johnston, President.

Richmond Commercial Club, E. M. Haas, Secretary.

State Board of Education, Chas. A. Greathouse, Superintendent of Public Instruction.

*Other co-operating agencies.*—Other agencies which co-operate in the survey include the United States Bureau of Education, which provided the services of their specialist in school and home gardening for the study of gardening problems; the Richmond Central Labor Union, which furnished valuable data and also two members for the general survey committee; the Wayne County Social Service Bureau, which furnished data regarding juvenile employment; and the Morrison-Reeves Public Library which provided the Survey office with all needed publications.

### **Purpose and General Method**

*Purpose.*—The purpose of the Survey was, (1) to suggest a program for vocational education (as defined in the Indiana law) for all day, part-time and evening schools for Richmond; (2) to suggest provisions which should be made in the reorganized Junior high school for vocational preparatory and vocational education for industry, commerce, agriculture and household arts; and (3) to devise a program for industrial, fine and household arts for the elementary schools.

*General method.*—The method proposed and agreed upon for gathering data was intensive study and investigation of the schools and of the productive life of the community by expert investigators and research agents, supplemented by the teaching force of Richmond. It was further agreed, however, that data should be interpreted in conferences, and that the educational recommendations be formulated by the free interchange of opinion of the members of the various committees, constituted as hereafter described.

### Survey Procedure and Chronology

*Procedure.*—After the agreement between the operating agencies was formulated and signed, the general committee was appointed. In its preliminary meeting the committee decided upon the general purpose of the survey and also appointed a local survey committee, as well as a committee for each field studied.

The local committee was to be representative of commercial, educational and productive interests of the city and each conference committee was to be composed of employers, teachers and citizens.

After the field workers had gathered and organized the material facts, the findings were presented to the conference committees for suggestions and modifications, after which each report was edited, and again presented to the committee for approval. After approval by the conference committees, the local committee considered and approved the entire report section. The general survey committee then considered the report of the findings and drafted recommendations for the improvement of vocational education in Richmond. The whole report and recommendations were then presented and approved by the State Board of Education.

The report and recommendations have thus been considered and approved by the Local Conference Committees, the Survey Committee, the General Conference Committee and the State Board of Education.

*Chronology.*—The following are the main points in the chronology of the Survey.

May 6, 1915. Invitation sent by Richmond Board of Education to Department of Vocational Education, Indiana University to conduct the Survey.

September-December, 1915. Consideration of the purpose, scope and work of co-operating agencies.

January 3, 1916. Actual work of the Director of Vocational Education in Richmond.

January 22, 1916. First meeting of the General Conference Committee at Minneapolis.

February 1, 1916. Actual field work started.

February-May, 1916. Meetings of various Conference Committees and Local Committee.

February 3-4, 1916. Second meeting of the General Survey Committee at South Bend.

May 10-13, 1916. Third meeting of the General Survey Committee held at Richmond.

May 15, 1916. Field work concluded.

June 21, 1916. Report and recommendations considered and approved by the State Board of Education.

October 15, 1916. Completed report transmitted to the state printer.

### **Personnel of the Survey**

#### **Director and Staff**

Robert J. Leonard, Director, Professor of Vocational Education, Indiana University.

Ralph D. Fleming, Research Agent.

Jeannette Eaton, Research Agent.

Helen Dart, Research Agent.

#### **Research Contributors**

During the Survey a large number of educators, teachers and students contributed in a very substantial manner by doing field work and preparing sections of the report. The following educators contributed in this manner:

Adelaide Steele Baylor, State Supervisor of Domestic Science, Indianapolis, Indiana.

J. L. Randall, Specialist in School and Home Gardening, United States Bureau of Education, Washington, D. C.

Mabel T. Wellman, Associate Professor of Home Economics, Indiana University.

Paul Brown, Director of Manual Training, Earlham College.

Elsie Marshall, Director of Domestic Science, Earlham College.

The following Richmond teachers rendered a very real service by doing field work and taking part in conferences:

Myrtle Shallenburg

Mary E. Williams

Electa Henley

Bertha E. Larsh

Emma Bond

Clara Graves

Frank G. Pickell

Charles O. Mays

Elbert Vickery

C. E. Strait



Carry C. Lesh  
Stella Kelsey  
Florence King

Charles F. Towle  
E. R. Helman  
Voyle Hybarger

The following Earlham College students assisted in the

Selina Gehr  
Mary Mather  
Gertrude Johnson  
Halcyon Hastings  
Mabel Martin  
Elsie McClane

Vera Newsome  
Isabel Crabb  
Mabel Adams  
Wynima Binford  
Mary Hiss  
W. R. Baldwin

The contribution made by the members of the various committees is of inestimable worth. Sacrificing business engagements, those who accepted committee appointments steadfast in their devotion to the work of the Survey and these men and women that a large measure of the success of the Survey is due.

#### General Survey Committee

- J. T. Giles, Chairman, Superintendent of Richmond Schools.
- F. G. Bonser, Professor of Industrial Education, Earlham College, Columbia University, New York City
- Miss Cleo Murtland, Secretary Women's Work, Society for the Promotion of Industrial Education, New York City.
- John A. Lapp, Director, Bureau of Legislative Information, Indianapolis, Indiana.
- C. A. Winslow, Special Agent for Vocational Information, State Board of Education, Indianapolis, Indiana.
- W. F. Book, State Director Vocational Education, Indianapolis, Indiana.
- R. J. Leonard, Professor of Vocational Education, Indiana University, Bloomington, Indiana.

#### Local Survey Committee

- J. T. Giles, Chairman, Superintendent of Richmond Schools.
- A. C. Allen, Secretary, Printer, Representative Central Labor Council.
- H. R. Robinson, Manufacturer, Secretary, Swaybinson Company.

- P. A. Reid, Manufacturer, Secretary, Elliott-Reid Company,  
Member State and Richmond Board of Education.  
B. F. Edwards, Grocer, Representative Central Labor  
Council.  
G. H. Knollenberg, Proprietor Dry Goods and Furnishing  
Store.  
Miss S. A. Hill, Secretary Hill Floral Company and Member  
Richmond Board of Education.  
Mrs. C. B. Graves, Teacher, Garfield School.  
Mrs. E. E. McDivitt, Representative Women's Clubs.  
Dr. M. F. Johnston, Physician, Representative Richmond  
Board of Education.  
Dr. R. L. Kelly, President Earlham College.

**Local Conference Committees**

**Household Employment**

- Mrs. Elizabeth W. Candler, Visitor, Wayne County Social  
Service Bureau.  
Mrs. Paul Comstock, Housewife.  
Miss Florence King, Domestic Science Teacher, High  
School.  
Mrs. Elizabeth Hinshaw, Household Employe.  
Mrs. L. D. Mahin, District Nurse, Wayne County Social  
Service Bureau.

**Practical Nursing**

- Mrs. Mary A. Albright, Practical Nurse.  
Mrs. Frank Land, Housewife.  
Dr. Joseph Kinsey, Physician.  
Dr. S. C. Markey, Physician.  
Miss Mabel T. Wellman, Associate Professor of Home  
Economics, Indiana University.

**Trained Nursing**

- Miss Clara B. Pound, Superintendent of Nurses, Reid  
Memorial Hospital.  
Dr. Melville F. Johnston, Physician.  
Mr. Frank G. Pickell, Principal, Richmond High School.  
Miss Adelaide Steele Baylor, State Superintendent of  
Domestic Science.  
Miss Mabel T. Wellman, Assistant Professor of Home  
Economics, Indiana University.  
Miss Florence King, Domestic Science Teacher, Richmond  
High School.

**Commercial Employment**

Elmer Eggemeyer, Proprietor, Bee Hive Grocery.  
A. G. Parker, Secretary, Retail Clerks Union, Nut  
E. R. Helman, Head of the Commercial Department,  
Richmond High School.  
E. B. Jones, Assistant Manager, Jones Hardware Co.  
Margaret Conroy, Head of Cloak and Suit Department,  
L. E. Neusbaum Clothing Store.

**Metal Working**

Clarence Brown, Moulder, Representative Moulder  
Number 272.  
H. S. Clark, Manager, Wescott Motor Car Company.  
W. B. Ward, Proprietor, Ward Machine Shop.  
Carl Lange, Manager, National Automatic Tool Company.

**Printing**

Charles F. Towle, Teacher of Printing, Richmond  
School.  
G. O. Ballenger, Proprietor, Ballenger Printing Company.  
Emery F. Wissler, Compositor, Representative International  
Typographical Union, Local Number 301.  
Harry Fossenkemper, Pressman, Representative Printers  
Pressman and Assistants Union, Local Number 2.

**Building Trades**

Charles H. Johanning, Proprietor, Johanning Plumber  
Company.  
Wayne Horne, Plasterer, Secretary Operative Plasterers  
International Association, Local Number 407.  
Charles O. Mayes, Teacher, Head of Department of  
Industrial Arts, Richmond Schools.  
John Burdsell, Carpenter, Representative United Brotherhood  
of Carpenters & Joiners of America, Local Number  
912.  
G. M. Harris, Painter, Representative Brotherhood of  
Painters, Decorators and Paperhangers of America,  
Local Number 319.

**Home and School Gardening**

John F. Thompson, Teacher, Richmond High School.

W. K. Bradbury, Real Estate Agent.

Mrs. E. E. McDivitt, Representative Women's Clubs.

Z. M. Smith, State Director Agricultural Education.

J. T. Giles, Superintendent of Richmond Schools.

J. L. Randall, Specialist, Home and School Gardening, U.

S. Bureau of Education.



## CHAPTER II

### THE CITY OF RICHMOND

*General characteristics.*—Richmond is a beautiful and prosperous city of 24,369 inhabitants, located in Wayne County, Indiana, in the extreme eastern portion of the State. It is divided by the Whitewater river into an older and larger eastern section, and a newer and smaller section to the west of the river. Settled over a hundred years ago by Quakers and Germans, it is a quiet, conservative city, scarcely conscious even now of its own social problems, and of the changes which are constantly taking place. Many people of wealth live in Richmond, but within its bounds are also many people extremely poor. As a whole, Richmond is an unusually clean city, both physically and morally, and its people have high ideals. There are marked evidences that a new social consciousness is developing; clubs are uniting for civic betterment, programs for the improvement of public health are under way, the Chamber of Commerce is raising a large fund for new industrial enterprises, and the schools are now more democratic than ever before, and the teachers more tolerant of the view that education is a preparation for living. Earlham College, established in 1847, is located in Richmond, and exerts a decidedly intellectual influence upon the city.

*Growth of population.*—Compared with other Indiana cities of the 25,000 class, Richmond's growth during the decade from 1900 to 1910 ranks second, as will be noted from Table I.

TABLE I  
GROWTH OF RICHMOND AND OTHER INDIANA CITIES, 1900-1910.

CITIES	Population		Increase 1900 to 1910	
	1910 Census	1900 Census	Number	Per Cent.
Hammond.....	20,925	12,376	8,549	69.15
<b>RICHMOND.....</b>	<b>22,324</b>	<b>18,226</b>	<b>4,098</b>	<b>22.46</b>
Muncie.....	24,005	20,924	3,081	14.72
Anderson.....	22,476	20,178	2,298	11.38
Lafayette.....	20,081	18,116	1,965	10.84
New Albany.....	20,629	20,628	1	.....

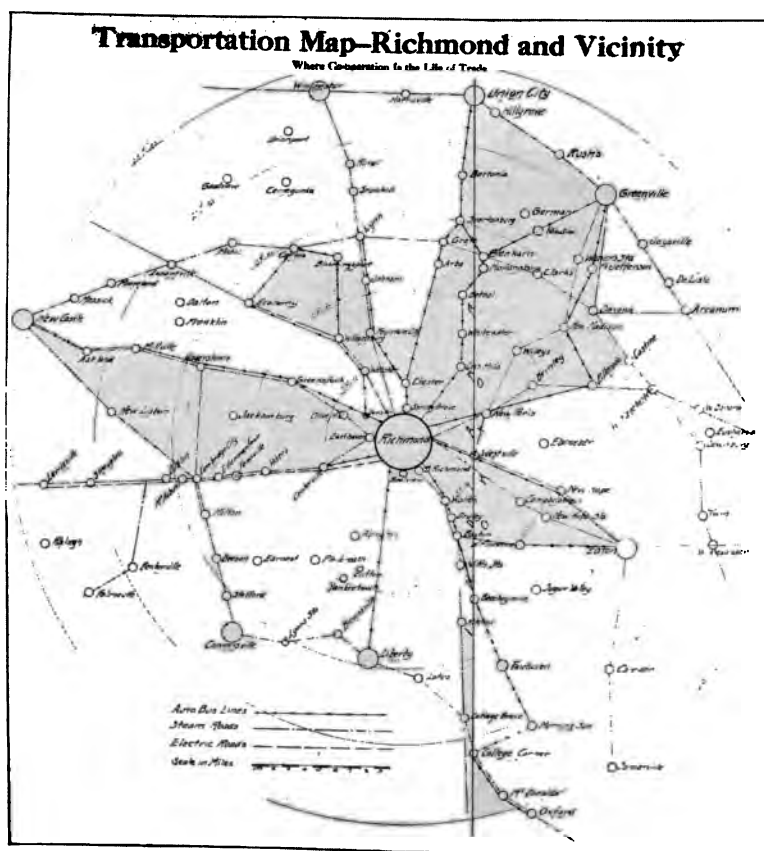
**TABLE 2**  
**COMPOSITION OF POPULATION OF RICHMOND AND FIVE OTHER INDIANA CITIES, 1910**

CITIES	Population 1910 Census	Native White of Native Parentage		Native White of Foreign or Mixed Parentage		Foreign Born White		Negro	
		Number	Per Cent.	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
Hammond.....	20,925	8,025	38.35	7,290	34.84	5,553	26.54	40	.19
Lafayette.....	20,081	12,695	63.22	5,019	24.99	2,019	10.05	338	1.68
New Albany.....	20,629	14,281	69.23	3,907	18.94	858	4.15	1,583	7.68
<b>RICHMOND</b> .....	<b>22,324</b>	<b>16,076</b>	<b>72.01</b>	<b>3,874</b>	<b>17.35</b>	<b>1,173</b>	<b>5.26</b>	<b>1,191</b>	<b>5.34</b>
Muncie.....	24,005	19,876	82.80	2,277	9.49	840	3.50	1,005	4.15
Anderson.....	22,476	18,900	84.09	2,061	9.18	977	4.35	532	2.37

*Composition of population.*—Of the entire population of Richmond in 1910, over 70 per cent. were native white of native parents; over 17 per cent. of native white of native and foreign born parents; and only about 5 per cent. of foreign born parents. The city is thus confronting the problem of devising a scheme of vocational education for native white residents. The facts of nativity of population of Richmond compared with five other Indiana cities will be noted from Table 2.

*Illiteracy.*—According to the United States census, an illiterate is a person over 10 years of age unable to write regardless of his ability to read. On this basis in 1910 there were fewer illiterates in Richmond than any other Indiana city of the same size. These comparative facts are recorded in Table 3.

*Richmond as a commercial center.*—Being a division point on





the main line of the Pennsylvania Railroad from Saint Petersburg, and an important station on the Chesapeake and the Grand Rapids and Indiana Railroads, Richmond has unusual commercial advantages. In addition to these steam lines, there is frequent interurban electric service to Indiana and Ohio cities, and there has recently developed a system of auto bus lines connecting Richmond with all sections of Wayne County. With all these transportation facilities, Richmond has developed into the principal commercial center of eastern Michigan. The transportation map here reproduced shows the extent and development of these facilities.

*Richmond as a manufacturing center.*—Although usually regarded as a city dominated by professional and commercial activities, two-thirds of the total working population are employed in manufacturing and factories. From the very early days, Richmond has been the principal manufacturing center for agricultural implements in the middle west. The piano, automobile, casket, wire fence, automatic tool, and lawn mower industries are of great local and State importance. According to the United States census of 1920 there were 118 manufacturing establishments with a total investment of \$10,969,000. These establishments gave employment to 4,238 workers who received \$2,316,000 in wages.

*Richmond as an educational and literary center.*—As an educational and literary center, Richmond takes first place among Indiana cities. The early settlers of Richmond built schools at the first possible opportunity, constructing rude log schools corresponding with their own rude dwellings. The first record of attention to educational matters is found in the minutes of a meeting held on the 25th of the eighth month, 1810, as follows: "When a committee was appointed to dispose of a number of books which had been received from the quarterly meeting of The Committee, appointed by the monthly meeting, managers of the schools, selected the pupils, collected pay, and hired the teachers. The schools were open to all the children in the community, whether Quakers or not.

The first secular school was supposed to have been established in 1807; but it is probable that all the legislation until 1831 was of no avail to the people of Wayne County. By the revision of the law of 1831, authorizing the election of school trustees in each congressional district, and the law of 1834, creating a county

**TABLE 3**  
**ILLITERACY IN RICHMOND AND OTHER INDIANA CITIES IN 1910**

CITIES	Total Population Over 10 Years of Age			Native White Over 10 Years of Age			Foreign Born White Over 10 Years of Age		
	Population	Illiterates		Population	Illiterates		Population	Illiterates	
		Number	Per Cent.		Number	Per Cent.		Number	Per Cent.
Hammond. ....	16,624	720	4.43	10,790	40	.39	5,381	675	12.54
Anderson. ....	18,325	462	2.52	16,898	298	1.17	966	119	11.28
Lafayette. ....	17,071	373	2.13	14,800	137	.92	1,989	205	10.30
Muncie. ....	19,685	499	2.53	17,982	278	1.54	837	105	12.54
New Albany. ....	17,125	550	3.21	14,949	229	1.53	855	57	6.63
<b>RICHMOND. ....</b>	<b>18,585</b>	<b>261</b>	<b>1.40</b>	<b>16,423</b>	<b>101</b>	<b>.61</b>	<b>1,158</b>	<b>81</b>	<b>7.00</b>

school fund, great impetus was given to public school in Richmond. However, there were no schools entirely after the constitution of 1851 went into effect, and the schools became a part of the system of Public Instruction of the State of Indiana.

It is thus seen that, from the very earliest days, the people of Richmond have been interested in public education. The development of the schools since 1855 parallels the development of those of most cities of this type, with the exception, however, that in recent years, the expenditure of public funds for schools, including buildings, equipment and salaries for administrators and teachers, has not been adequate or even as high as in other cities of this class.

The history of the newspapers of Richmond throw in side lights upon the character of the city. As early as 1811 there were two weeklies; The Richmond Weekly Intelligencer and the Weekly Emporium. In 1824, the Public Ledger appeared as a weekly, in size about 13 by 21 inches, the subscription being \$2.00 per year. The Richmond Palladium, still published under the same name, was established by Nelson Boon, in 1831. At present there are two flourishing daily and one newspaper.

**PART TWO**  
**OCCUPATIONAL INFORMATION**



## CHAPTER III

### OVERVIEW OF INDUSTRIAL EMPLOYMENT

#### The Richmond Industries

*Importance of Richmond industries.*—The industries of Richmond are the most important economic factor in the life of the city. In 1914, according to advance reports issued by the United States Bureau of the Census, there were 118 manufacturing establishments in the city giving employment to 4,238 workers. The capital invested was \$10,969,000 and the products manufactured were valued at \$10,252,000. The wages paid amounted to \$2,316,000. These figures do not include the hand trades, the building trades, neighborhood industries or other types of production not actually carried on under the factory system. The actual and percentage increase in the number of workers in manufacturing establishments in Richmond and other Indiana cities is recorded in Table 4.

TABLE 4

ACTUAL AND PERCENTAGE OF INCREASE OF WORKERS IN  
MANUFACTURING PLANTS IN RICHMOND AND OTHER  
INDIANA CITIES, 1904-1909

CITIES	Workers Employed in Manufacturing Plants		Increase in Workers 1904-1909	
	1909	1904	Number	Per Cent.
Hammond.....	4,379	1,702	2,677	157
Anderson .....	5,109	3,491	1,618	46
Muncie.....	4,444	3,106	1,338	43
<b>RICHMOND.....</b>	<b>4,433</b>	<b>3,483</b>	<b>950</b>	<b>27</b>
Indianapolis.....	37,929	31,431	6,495	26
New Albany.....	2,135	2,444	-309*	-12*
Lafayette.....	1,983	2,097	-114*	-7*

\*Decrease.

That the industries of Richmond in 1909 employ larger per cent. of all the workers of the city than any Indiana cities is noted from Table 5.

**TABLE 5**  
**PERCENTAGE OF TOTAL INHABITANTS EMPLOYED IN**  
**FACTURING ESTABLISHMENTS IN RICHMOND AND C**  
**CITIES, DERIVED FROM NUMBER IN INDUSTRY**  
**IN 1909, AND POPULATION IN 1910**

CITIES	Per Cent. in Industry	CITIES	1
Anderson.....	23.0	Indianapolis.....	
Hammond.....	21.0	New Albany.....	
<b>RICHMOND.....</b>	<b>20.0</b>	Lafayette.....	
Muncie.....	18.0		

*Industries analyzed by the Survey.*—The industrial Richmond includes the twenty-three most important which are analyzed in detail in the twelve following. These industries give employment to about 5,000 workers, representing over 250 distinct trades, 145 of which were studied in detail. The complete list of the industries studied, the occupations analyzed, and the male and female worker found in Table 6.

### Statistical Facts About Workers

Individual schedules were filled out by 471 workers in the industries analyzed by the Survey. While this number is only one-tenth of all employed in the industries studied, it is believed that the information obtained from this group of workers is typical and representative of the total group. The details are recorded in the following paragraphs and tables.

*Place of birth.*—The most striking single fact about the workers in Richmond manufacturing establishments is that the majority are native born Americans. Of the whole group studied but thirty-four are foreign born. These facts of birth are reported in Table 7.

*Age groups.*—Compared with Richmond, Virginia, and the average for other cities throughout the country, there is a

TABLE 6

TOTAL NUMBER OF WORKERS EMPLOYED ON MARCH 1, 1916,  
IN INDUSTRIES ANALYZED BY THE SURVEY (OFFICE  
AND SALES FORCE EXCLUDED)

INDUSTRY	Number of Occu- pations Analyzed	Workers Employed		
		Males	Females	Total
Automobile.....	8	173	15	188
Wire fence.....	10	126	.....	126
Lawn mower.....	10	154	.....	154
Agricultural implement.....	13	791	.....	791
Railroad repairing, machine tool man- ufacturing and other metal indus- tries.....	17	1,182	.....	1,182
Musical instrument, casket and fur- niture industries.....	24	873	64	937
Job and newspaper printing.....	10	72	.....	83
Building construction.....	14	509	.....	509
Underwear, glove and workmen's wear industries.....	21	88	492	580
Ladies' tailoring, dressmaking and general sewing.....	3	5	181	186
Dry cleaning, dyeing and hat cleaning.	8	24	16	40
Laundry.....	7	13	26	39
Grand Total.....	145	4,010	794	4,815

in Richmond to enter the industries listed at a later age and to remain in them for a longer period of time. Exact figures for purposes of comparison are available for 419 workers in Richmond, Indiana, and 509 in Richmond, Virginia. In the former city, 12 per cent. of the workers are under 21 years of age; 64 per cent. between 21 and 45 years; and 24 per cent. over 45 years; whereas in the latter city the percentage for the same groups are 15, 72, and 13. The age groups of Richmond workers are recorded in Table 8.

*Conjugal condition.*—It will be noted from Table 9 that less than one-fourth of the 424 workers reporting are single.

*Education.*—It will be noted from Table 10 that one-half of the 377 workers reporting attended the Richmond schools and one-half schools elsewhere and that more of those who attended schools



elsewhere completed the elementary school as well school.

*Age upon leaving school.*—Regarding the age at workers left school, fewer than one-half left under th years, indicating that the majority of these workers i school considerably beyond the present working p Coupled with schools completed, these facts indicat Richmond industrial workers have received more edu the great majority so employed in other parts of th The detailed facts are recorded in Table 11.

*Hours of work.*—The majority of the 423 work working over ten hours each week day and over eigh Saturday. There are exceptions, however, in the wo men, moulders, factory seamstresses, and other skill tions where the majority work from nine to ten hou days and from five to eight hours on Saturdays. Th each group of trades are recorded in Table 12.

*Wages.*—Richmond wages are unusually low, one-f 278 workers reporting receive less than \$10.01 each w one-half of all reporting receive less than \$15.01 each four-fifths of all reporting receive under \$20.01 each w wage variation by trade groups will be found in Table 13

*Years of experience.*—The distinctive fact to be n Table 14 regarding the number of years of experience in t occupation of 416 workers reporting, is the relati period of time which the present occupation has been This fact is consistent with the relatively high perc older workers employed in Richmond, as previously not

*Other occupations followed.*—Not one of the 310 w porting are now working at their first line of employr majority have worked at one other occupation and ma other occupations. These facts are recorded in Table 15

*Courses taken since leaving school.*—One hundred an 366 workers report taking courses of some kind sinc school; of these, public night school courses were most f taken. The detailed facts by trade groups will be found 16.

**TABLE 7**  
**PLACE OF BIRTH OF 457 WORKERS IN MANUFACTURING ESTABLISHMENTS**

OCCUPATIONS	Number Reporting	Number not Reporting	Total	Place of Birth			
				Richmond	Indiana Other than Richmond	U. S. Other than Richmond	Foreign Country
Foremen.....	33	.....	33	9	8	12	4
Wood machine operators.....	36	3	39	11	12	12	1
Moulders.....	27	.....	27	16	3	8	.....
Machinists.....	21	1	22	12	6	3	.....
Metal machine operators.....	22	.....	22	8	6	6	2
Cabinet makers.....	19	2	21	4	8	2	5
Bench wood workers.....	18	1	19	5	4	5	4
Factory seamstresses (not garment factory).....	16	.....	16	2	7	7	.....
Fence loom operators.....	14	1	15	4	7	3	.....
Painters.....	11	.....	11	1	6	3	1
Platers and polishers.....	9	1	10	3	2	4	.....
Other skilled occupations.....	111	2	113	30	44	34	3
Miscellaneous semi-skilled occupations.....	74	3	77	22	23	21	8
Laborers.....	28	.....	28	4	12	7	5
Drivers and teamsters.....	6	.....	6	1	3	1	1
Receiving and shipping clerks.....	12	.....	12	4	2	6	.....
Grand Total.....	457	14	471	136	153	134	34

TABLE 8  
AGE OF 419 WORKERS IN MANUFACTURING ESTABLISHMENTS

OCCUPATIONS	Number Reporting	Number not Reporting	Total	Age Groups—Years		
				Under 21	21 to 45	Over 45
Foremen.....	30	3	33	.....	17	13
Wood machine operators.....	31	8	39	8	15	8
Moulders.....	24	3	27	.....	23	1
Machinists.....	21	1	22	2	13	6
Metal machine operators.....	22	.....	22	3	15	4
Cabinet makers.....	17	4	21	2	9	6
Bench wood workers.....	17	2	19	.....	8	9
Factory seamstresses (not garment factory).....	14	2	16	5	7	2
Fence loom operators.....	13	2	15	1	11	1
Painters.....	11	.....	11	.....	8	3
Platers and polishers.....	4	6	10	.....	3	1
Other skilled occupations.....	105	8	113	15	70	20
Miscellaneous semi-skilled occupations.....	67	10	77	11	49	7
Laborers.....	26	2	28	3	8	15
Drivers and teamsters.....	6	.....	6	.....	5	1
Receiving and shipping clerks.....	11	1	12	.....	10	1

TABLE 9  
CONJUGAL CONDITION OF 424 WORKERS IN MANUFACTURING ESTABLISHMENTS

OCCUPATIONS	Number Reporting	Number not Reporting	Total	Conjugal Condition		
				Single	Married	Widowed
Foremen. ....	29	4	33	3	24	2
Wood machine operators. ....	36	3	39	11	24	1
Moulders. ....	25	2	27	8	16	1
Machinists. ....	20	2	22	7	13	.....
Metal machine operators. ....	20	2	22	5	14	1
Cabinet makers. ....	19	2	21	2	14	3
Bench wood workers. ....	16	3	19	2	14	.....
Factory seamstresses (not garment factory). ....	15	1	16	10	5	.....
Fence loom operators. ....	15	.....	15	2	13	.....
Painters. ....	11	.....	11	.....	11	.....
Platers and polishers. ....	6	4	10	2	4	.....
Other skilled occupations. ....	98	15	113	29	62	7
Miscellaneous semi-skilled occupations. ....	71	6	77	34	28	9
Laborers. ....	27	1	28	5	21	1
Drivers and teamsters. ....	6	.....	6	1	5	.....
Receiving and shipping clerks. ....	10	2	12	2	8	.....
Grand Total. ....	424	47	471	123	276	25

## OCCUPATIONAL INFORMATION

**TABLE 10**  
**SCHOOLS ATTENDED AND GRADE COMPLETED BY 377 WORKERS IN MANUFACTURING ESTABLISHMENTS**

OCCUPATIONS	Num-ber Re- port- ing	Num-ber not Re- port- ing	Richmond Schools					Schools Elsewhere					Total	
			Part Ele- men- tary	Com- plete Ele- men- tary	Part High School	Com- plete High School	Par- ochial	Total	Part Ele- men- tary	Com- plete Ele- men- tary	Part High School	Com- plete High School		Par- ochial
Foremen.....	29	4	6	2	2	3	1	14	2	8	3	2	.....	15
Wood machine opera- tors.....	33	6	4	4	2	.....	7	17	3	7	4	2	.....	16
Moulders.....	24	3	5	3	3	.....	8	19	1	2	1	.....	1	5
Machinists.....	17	5	2	2	5	1	4	14	.....	3	.....	.....	.....	3
Metal machine opera- tors.....	15	7	2	2	3	.....	1	8	2	5	.....	.....	.....	7
Cabinet makers.....	13	8	.....	2	1	.....	.....	3	2	6	1	.....	1	10
Bench wood workers..	15	4	2	3	1	.....	2	8	3	2	.....	1	1	7
Factory seamstresses (not garment fac- tory).....	10	6	.....	2	1	2	.....	5	.....	2	.....	2	1	5

Table 10—Continued

Miscellaneous semi-skilled occupations..	68	9	77	9	12	2	1	6	30	6	17	7	3	5	38
Laborers.....	17	11	28	3	2	1	.....	.....	6	4	4	.....	1	2	11
Drivers and teamsters.	2	4	6	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	2
Receiving and shipping clerks.....	8	4	12	2	.....	1	.....	1	4	1	1	1	1	.....	4
Grand Total.....	377	94	471	46	55	30	12	44	187	41	90	30	17	12	190

TABLE II  
AGE UPON LEAVING SCHOOL OF 413 WORKERS IN MANUFACTURING ESTABLISHMENTS

OCCUPATIONS	Number Report- ing	Number not Report- ing	Total	Age Upon Leaving School					
				Under 14 years	14 years	15 years	16 years	17 years	18 years
Foremen . . . . .	32	1	33	5	8	5	3	2	9
Wood machine operators . . . . .	34	5	39	4	11	4	3	5	7
Moulders . . . . .	24	3	27	4	5	4	9	1	1
Machinists . . . . .	20	2	22	2	3	6	4	1	4
Metal machine operators . . . . .	18	4	22	1	2	2	9	1	3
Cabinet makers . . . . .	13	8	21	1	2	3	3	2	2
Bench wood workers . . . . .	17	2	19	1	5	2	4	.....	5
Factory seamstresses (nor garment fac- tory) . . . . .	15	1	16	2	2	1	3	4	3
Fence loom operators . . . . .	12	3	15	1	5	4	1	.....	1
Painters . . . . .	11	.....	11	1	2	4	.....	3	1
Platers and polishers . . . . .	9	1	10	1	4	2	1	.....	1
Other skilled occupations . . . . .	99	14	113	9	23	18	17	11	21
Miscellaneous semi-skilled occupations . . . . .	70	7	77	7	21	16	13	7	2

TABLE 12  
HOURS OF WORK ON WEEK DAYS AND SATURDAYS OF 423 WORKERS IN MANUFACTURING ESTABLISHMENTS

OCCUPATIONS	Num- ber Re- port- ing	Num- ber Re- port- ing	Total	Daily Hours of Work— Week Days				Hours and Work— Saturdays			
				8 to 9	9 to 10	10 to 11	Over 11	5 to 8	8 to 9	9 to 10	10 to 11
Foremen.....	26	7	33	.....	13	20	.....	13	18	1	1
Wood machine operators.....	36	3	39	1	9	29	.....	6	33	.....	.....
Moulders.....	23	4	27	2	22	3	.....	20	7	.....	.....
Machinists.....	20	2	22	.....	8	14	.....	8	8	6	.....
Metal machine operators.....	18	4	22	1	8	13	.....	11	9	2	.....
Cabinet makers.....	20	1	21	.....	4	17	.....	3	18	.....	.....
Bench wood workers.....	18	1	19	.....	6	13	.....	5	12	2	.....
Factory seamstresses (not garment factory)...	16	.....	16	1	15	.....	.....	15	.....	.....	1
Fence loom operators.....	14	1	15	.....	3	12	.....	2	13	.....	.....
Painters.....	9	2	11	.....	7	4	.....	9	.....	2	.....
Platers and polishers.....	9	1	10	.....	2	8	.....	1	9	.....	.....
Other skilled occupations.....	104	9	113	18	76	17	2	74	22	15	2
Miscellaneous semi-skilled occupations.....	65	12	77	.....	18	58	1	7	68	2	.....
Laborers.....	27	1	28	.....	10	13	5	7	15	.....	6
Drivers and teamsters.....	6	.....	6	5	1	.....	.....	.....	.....	5	1
Receiving and shipping clerks.....	12	.....	12	.....	10	2	.....	3	5	3	1
Grand total.....	423	48	471	28	212	223	8	184	239	38	12



TABLE 11  
AGE UPON LEAVING SCHOOL OF 413 WORKERS IN MANUFACTURING ESTABLISHMENTS

OCCUPATIONS	Number Report- ing	Number not Report- ing	Total	Age Upon Leaving School					
				Under 14 years	14 years	15 years	16 years	17 years	18 years
Foremen.....	32	1	33	5	8	5	3	2	9
Wood machine operators.....	34	5	39	4	11	4	3	5	7
Moulders.....	24	3	27	4	5	4	9	1	1
Machinists.....	20	2	22	2	3	6	4	1	4
Metal machine operators.....	18	4	22	1	2	2	9	1	3
Cabinet makers.....	13	8	21	1	2	3	3	2	2
Bench wood workers.....	17	2	19	1	5	2	4	.....	5
Factory seamstresses (nor garment fac- tory).....	15	1	16	2	2	1	3	4	3
Fence loom operators.....	12	3	15	1	5	4	1	.....	1
Painters.....	11	.....	11	1	2	4	.....	3	1
Platers and polishers.....	9	1	10	1	4	2	1	.....	1
Other skilled occupations.....	99	14	113	9	23	18	17	11	21
Miscellaneous semi-skilled occupations..	70	7	77	7	21	16	13	7	6

**TABLE 12**  
**HOURS OF WORK ON WEEK DAYS AND SATURDAYS OF 423 WORKERS IN MANUFACTURING ESTABLISHMENTS**

OCCUPATIONS	Num- ber Re- port- ing	Num- ber Re- port- ing	Total	Daily Hours of Work— Week Days				Hours and Work— Saturdays			
				8 to 9	9 to 10	10 to 11	Over 11	5 to 8	8 to 9	9 to 10	10 to 11
Foremen.....	26	7	33	.....	13	20	.....	13	18	1	1
Wood machine operators.....	36	3	39	1	9	29	.....	6	33	.....	.....
Moulders.....	23	4	27	2	22	3	.....	20	7	.....	.....
Machinists.....	20	2	22	.....	8	14	.....	8	8	6	.....
Metal machine operators.....	18	4	22	1	8	13	.....	11	9	2	.....
Cabinet makers.....	20	1	21	.....	4	17	.....	3	18	.....	.....
Bench wood workers.....	18	1	19	.....	6	13	.....	5	12	2	.....
Factory seamstresses (not garment factory)...	16	.....	16	1	15	.....	.....	15	.....	.....	1
Fence loom operators.....	14	1	15	.....	3	12	.....	2	13	.....	.....
Painters.....	9	2	11	.....	7	4	.....	9	.....	2	.....
Platers and polishers.....	9	1	10	.....	2	8	.....	1	9	.....	.....
Other skilled occupations.....	104	9	113	18	76	17	2	74	22	15	2
Miscellaneous semi-skilled occupations.....	65	12	77	.....	18	58	1	7	68	2	.....
Laborers.....	27	1	28	.....	10	13	5	7	15	.....	6
Drivers and teamsters.....	6	.....	6	5	1	.....	.....	.....	.....	5	1
Receiving and shipping clerks.....	12	.....	12	.....	10	2	.....	3	5	3	1
Grand total.....	423	48	471	28	212	223	8	184	239	38	12

TABLE 13  
WEEKLY EARNINGS OF 278 WORKERS IN MANUFACTURING ESTABLISHMENTS

OCCUPATIONS	Num- ber Re- port- ing	Num- ber not Re- port- ing	Weekly Earnings										
			Total										
			\$5.01 to \$6.00	\$6.01 to \$7.00	\$7.01 to \$8.00	\$8.01 to \$9.00	\$9.01 to \$10.00	\$10.01 to \$12.50	\$12.51 to \$15.00	\$15.01 to \$18.00	\$18.01 to \$20.00	\$20.01 to \$25.00	\$25.01 to \$30.00
Foremen.....	17	16						2	4	4	1	5	1
Wood machine operators.....	16	23				2	2	6	6				
Moulders.....	15	12								2	4	7	2
Machinists.....	16	6						4	2	8	1	1	
Metal machine operators.....	16	6				1		9	1	4			1
Cabinet makers.....	8	13		1				2	4	1			
Bench wood workers.....	10	9					1	4	2	3			
Factory seamstresses (not gar- ment factory).....	14	2		7	2			4	1				
Fence loom operators.....	10	5						5	2	2		1	
Painters.....	6	5							3	1	1	1	
Platers and polishers.....	2	8						1				1	
Other skilled occupations.....	73	40	5	2	1	3	3	10	17	17	5	4	6
Miscellaneous semi-skilled oc- cupations.....	42	35	3	6	4	4	2	7	6	9	1		
<b>Total</b> .....	<b>24</b>	<b>4</b>		<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>18</b>					

TABLE 14  
NUMBER OF YEARS OF EXPERIENCE IN PRESENT OCCUPATION OF 416 WORKERS IN MANUFACTURING ESTABLISHMENTS

OCCUPATIONS	Num-ber Re- port- ing	Num-ber not Re- port- ing	Total	Years of Experience							
				1 year	2 years	3 years	4 years	5 years	6 to 10 years	11 to 15 years	Over 15 years
Foremen.....	31	2	33	2	2	.....	4	.....	4	6	13
Wood machine operators.....	37	2	39	10	1	4	3	4	8	2	5
Moulders.....	27	.....	27	.....	.....	.....	.....	1	9	9	8
Machinists.....	22	.....	22	1	1	2	.....	.....	8	2	8
Metal machine operators.....	17	5	22	3	.....	3	1	1	6	1	2
Cabinet makers.....	18	2	20	1	1	.....	3	1	3	2	7
Bench wood workers.....	16	3	19	3	1	2	.....	2	1	2	5
Factory seamstresses (not garment factory)....	15	1	16	7	1	.....	.....	.....	3	2	2
Fence loom operators.....	15	.....	15	.....	1	2	.....	2	8	2	.....
Painters.....	10	1	11	.....	.....	.....	.....	.....	1	1	8
Platers and polishers.....	8	2	10	.....	.....	.....	1	1	4	1	1
Other skilled occupations.....	100	13	113	12	6	10	9	5	28	7	23
Miscellaneous semi-skilled occupations.....	67	10	77	5	14	10	10	7	7	4	10
Laborers.....	19	9	28	3	4	5	.....	.....	3	1	3
Drivers and teamsters.....	5	1	6	1	.....	.....	.....	1	1	1	1
Receiving and shipping clerks.....	9	3	12	4	1	.....	2	.....	2	.....	.....
Grand Total.....	416	54	470	52	33	38	33	25	96	43	96

**TABLE 15**  
**NUMBER OF OCCUPATIONS OTHER THAN THE PRESEN**  
**LOWED BY 310 WORKERS IN MANUFACTURING**  
**ESTABLISHMENTS**

OCCUPATIONS	Number Re- porting	Number not Re- porting	Total	Nu Oth I	
				1	2
Foremen . . . . .	23	10	33	11	9
Wood machine operators . . . . .	29	10	39	15	9
Moulders . . . . .	14	13	27	11	2
Machinists . . . . .	10	12	22	7	3
Metal machine operators . . . . .	19	3	22	14	2
Cabinet makers . . . . .	14	7	21	9	4
Bench wood workers . . . . .	12	7	19	9	2
Factory seamstresses (not garment factory) . . . . .	7	9	16	5	2
Fence loom operators . . . . .	13	2	15	4	6
Painters . . . . .	7	4	11	6	1
Platers and polishers . . . . .	9	1	10	7	2
Other skilled occupations . . . . .	68	45	113	33	29
Miscellaneous semi-skilled occupa- tions . . . . .	47	30	77	30	10
Laborers . . . . .	22	6	28	15	4
Drivers and teamsters . . . . .	5	1	6	2	2
Receiving and shipping clerks . . . . .	11	1	12	1	7
Grand Total . . . . .	310	161	471	179	94

TABLE 16  
NUMBER OF WORKERS AMONG 124 EMPLOYED IN MANUFACTURING ESTABLISHMENTS WHO HAVE TAKEN  
SPECIFIED COURSES SINCE LEAVING SCHOOL

OCCUPATIONS	Number Reporting	Number not Reporting	Total	Courses Taken		
				Free Night School	Tuition Business College	Tuition Corres- pondence School
Foremen.....	12	21	33	4	3	5
Wood machine operators.....	12	27	39	11	1	.....
Moulders.....	2	25	27	1	.....	1
Machinists.....	7	15	22	7	.....	.....
Metal machine operators.....	5	17	22	4	.....	1
Cabinet makers.....	6	15	21	6	.....	.....
Bench wood workers.....	1	18	19	.....	1	.....
Factory seamstresses (not garment factory).....	12	13	25	1	.....	11
Fence loom operators.....	2	13	15	1	.....	1
Painters.....	1	10	11	1	.....	.....
Platers and polishers.....	10	10	20	.....	.....	.....
Other skilled occupations.....	45	68	113	29	5	11
Miscellaneous semi-skilled occupations.....	6	71	77	5	.....	1
Laborers.....	1	27	28	.....	1	.....
Drivers and teamsters.....	.....	6	6	.....	.....	.....
Receiving and shipping clerks.....	2	10	12	.....	.....	.....
Grand Total.....	124	366	490	70	11	31



## CHAPTER IV

---

### INDUSTRIAL EMPLOYMENT: AUTOMOBILE MANUFACTURING

---

Inventions dealing with new methods of transportation are the fruit of the twentieth century. Among recent inventions none have had a more rapid development or attained a higher degree of perfection and had wider use than the automobile. While the beginning of the industry in this country was in 1895, with the granting of the Selden patent, which made use of an internal combustion engine for the propulsion of a vehicle, the industry did not become of commercial importance before the year 1900. From that time its development has been rapid.

*Factors contributing to development.*—Many factors have contributed to the rapid development of the automobile industry. The fact that it was not an outgrowth of an already highly developed industry with no accretion of accepted tradition, permitted the blazing of a new trail in industrial method. Automobile manufacturing, therefore, developed with few pre-conceived ideas as to factory processes. The industry, also from the beginning, has taken full advantage of scientific management. Furthermore, at the time of the inception of the industry the stock of world's knowledge of mechanics was relatively evenly divided among industrial countries with the possible exception of France, where it was more advanced. The advantage, however, which France possessed, was the early acceptance of the idea of the gasoline motor and not any secret process. Thus, the world's technical resources have been focussed upon the perfection of the automobile. Finally, coming in a very prosperous decade, from 1900 to 1910, automobiles were readily accepted by the public as a new means of transportation.

*Census figures showing growth.*—The rapidity with which the industry has grown is shown by contrasting the census years of 1899 and 1909. In the former year there were 57 establishments in the United States employing 2,241 wage-earners whose output



was valued at \$4,748,011; in the latter year there were 7 shipments, the wage-earners numbered 75,721 and the was valued at \$249,202,075.

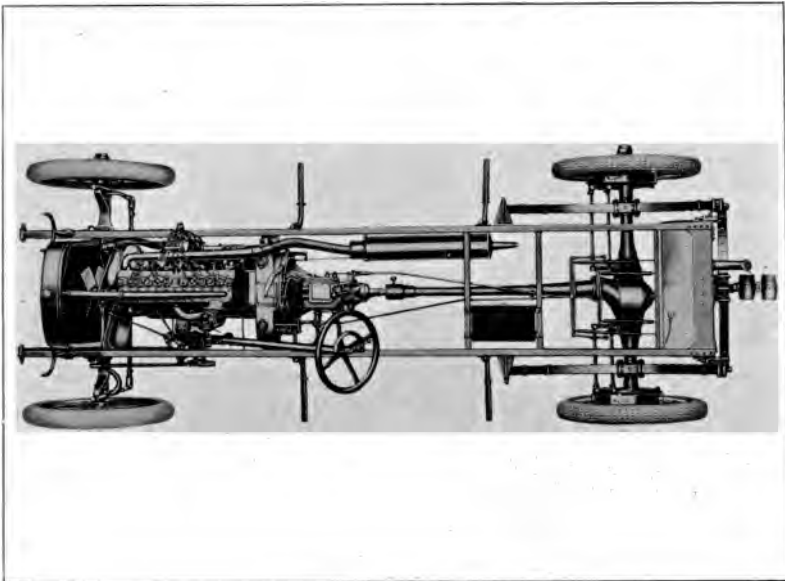
*Value of output.*—According to value of output Indiana in 1909 ranked fourth among the 19 states ing, being surpassed by Michigan, Ohio and New York. T of Indiana's automobile output was placed at \$23,764,070 Richmond is rated as one of the smaller automobile ce Indiana. There are three factories engaged in the man of pleasure cars employing over 250 workers.

### How an Automobile is Manufactured

*Multiplicity of parts required.*—Seeing an automobile t on the street, with every part working in perfect co-ord gives the impression of a vehicle of speed, ease of pro quickness and grace. Seeing the same vehicle in process c ufacture gives an entirely different concept. The multipl parts entering into its construction, and the great number and machine operations necessary before its completion the impression of a delicate and complicated piece of mec extremely difficult to master.

*Assembling industry in Richmond.*—All of the parts enter into the construction of automobiles made in Ri are purchased outside of the city and fitted and assembled local factories. The types of cars made, however, are dis and each manufacturer prides himself on his models, thei and fittings.

*First stage in manufacture.*—In the making of a typic mobile in a Richmond factory, the first step concerns its the turning out of "next year's" models. Sometime dur summer the company officials, the factory manager, the tising manager, the sales manager and superintendent conference and decide on the new models, the fittings to l the style of bodies to be adopted, the length of wheel b other essentials. Certain innovations in lighting and systems, in springs, axles or in any other part which ha introduced after the appearance of the last model, are "tri on an experimental car. Those proving satisfactory : adopted for the coming models.



Stripped of Body, Top and Fenders, the Modern Automobile is a Series of Mechanical Units, all Perfectly Co-ordinated.



Beauty of Design, as Well as Mechanical Perfection, is Essential in Automobile Construction.

*Making the new models.*—When the lines and fitting new models have been decided upon, the draftsman draws a model on paper from which an experimental car is made. The car is then given road tests, and if necessary, its design is changed to give a greater degree of comfort, beauty or utility. Wash drawings of the car and patterns of its various parts are sent to agents throughout the country and later are printed in catalogs. After the try outs are finished and the experimental model accepted, the stock models are made up for the coming year. The purchasing agent orders parts for a lot of 50, 75 or 100, as the case may be, and the cars are built. The line of models for the coming year are shown at the New York and Chicago automobile shows, and orders are taken for future deliveries.

*Inspection of consignments of parts.*—After the order for parts from the purchasing agent have been filled by various manufacturers, each consignment as it is received is given a thorough inspection with the exception of guaranteed parts, such as tires and standard accessories. The large parts are inspected as units, and the small parts by the random selection and inspection of a few from each lot.

*Classifying in stock room.*—Following the inspection the parts are taken to the stock room and are placed in bins according to the classification made up in the office. The stock room is equipped with a number of double decked trucks, each truck loaded with the parts needed for one group of operations performed by a gang of men.

*First assembling.*—In the first assembling process, springs, axles are attached to the frame; the steering gear is set and the gasoline tank attached to the rear of the frame. The propeller shaft and torque arm are attached and the wheels and carriers placed on the chassis, after which the battery and the transmission, the hand control, the foot control, the engine unit, the carburetor, the vacuum tank and the radiator are installed in their proper places. In the first assembly, the wheels and tires are placed on the frame, but later taken to the paint room, and put on the second time at the final assembly. At this state the chassis is given its first test.

In "testing out" the car, the tester looks for defects in the motor, ignition, oiling, fuel and cooling systems, trans-

frame, springs, axles, brakes, control and clutch, and the steering gear and wheels. The car is tried out on hills and level roads. Its maximum speed on a level is noted. If any of the above named parts fail to operate properly, a notation is made on a form prepared for the purpose and the report forwarded to the head tester who has the factory from which they were purchased replace, repair or adjust them.

*Painting department.*—The chassis is primed and painted, and the body is painted and varnished. Whatever striping is necessary is done in this department by the foreman. Enameling jobs are sent out to enameling shops.

*Woodworking department.*—In the wood room various wooden fittings are made and accessories are installed. Although the bodies are received in a finished state, they undergo certain minor changes to prepare them for parts to be attached. Doors are hung and locks tested. The wind shield is placed on the body and the small dash instruments, such as the clock, speedometer, oil gauge, foot and rest rails, are set in place. The auxiliary seats are then set in position. The running and toe boards are constructed in this department and mounted in the final assembling room.

*Electrical department.*—Wiring is the principal work of the electrical department. In this department starting and lighting units are properly wired. Making up the cable, attaching it to body, tonneau lights, etc., comprise the bulk of the work.

*Final assembling.*—The body is taken to the final assembling room where it is attached to the chassis. Here the tires are again fitted to the wheels and the sheet metal parts, including radiators, fenders, hood and lamps, are installed, after which the running and toe boards and top are set in place.

*Testing.*—There remains but one operation before the car is ready for shipment. The completed automobile is taken out and run a short distance to loosen up the running parts, and ascertain that the car is in perfect condition.

**Occupations and Number Employed**

	Males
First assemblers.....	29
Woodworkers (see also Chapter VII).....	7
Painters.....	34
Upholstery workers.....	38
Electrical workers.....	5
Final assemblers.....	29
Testers.....	14
Machine operators (see Chapter VIII).....	..
Blacksmiths (see Chapter VIII).....	8
Final inspectors (not analyzed).....	5
Engineers (not analyzed).....	4
	—
Total.....	173

It will be noted that the first and final assemblers over 32 per cent. of the total number of workers. 1 workers constitute 19 per cent. of the total number, while constitute the next largest group.

**Facts Common to All Workers**

*Mental and physical requirements of workers.*—The industry is essentially a young man's industry. Men life do not seem to be adaptable enough to meet the requirements of the business. Assemblers need the same ability as machinists. Cutters and back hangers should have a well developed sense of form, and painters, a well developed sense of color. For the woodworking, painting and cutting occupations, little physical strength is needed. The back hangers need a sense of form, the painter needs a sense of color and the woodworker the attitude of carefulness.

*General education required.*—All workers need at least a complete eighth grade education. Much of the work is on a basis, including first assembling, painting and trimming workers, therefore, must be able to read, write and add, in their time.

*Promotion.*—Promotion within or between departments is frequent. Most of the foremen were secured from the outside, although one present head tester and a foreman of the

shop were chosen from among the ranks. There is a possible narrow range of promotion within a department, as in the first assembling and trimming departments. In the majority of cases, however, a man is hired for a certain job and remains on that one job during his stay in the factory.

*Source and selection of workers.*—Employees are secured usually by the foreman of the respective departments. In some cases the superintendent sends a man to a foreman for the foreman's approval. The men secure their jobs by personal interview.

As most of the work requires special knowledge and experience, a man is hired because he can run a certain machine or perform a certain operation. When hard pressed for labor, an inexperienced worker may be hired, but a skilled operator is always given the preference.

*Seasonableness and overtime.*—There are two busy seasons in the automobile trade; one which starts about the first of February and continues to the middle of June; the other, which starts late in August and extends through until about Christmas. The slack season is becoming shorter each year. Companies do not lay off their men during the slack season. Overtime is very infrequent.

*Hazards and inherent character of work.*—The temperature and ventilation in the automobile factories are satisfactory.

The workers in the painting department are subject to all the occupational diseases of the trade. With the exception of some women sewers in the trimming room, the workers stand at the work.

*Wages.*—Wages are said to range from twelve to thirty-five dollars a week, with an average approximating twenty dollars. Cutting in the trimming department is among the highest paid occupations. The working day is ten hours with one-half day off on Saturday.

### **The First Assembler**

*What the worker does.*—Assembling operations may be roughly grouped under four different heads; riveting small parts on frames, attaching axles and springs, assembling the various units to the motor, and installing the motor and radiator.

The men work in groups of three or four about the chassis

which rests on steel horses. Nearby on trucks are placed various parts needed to be assembled. The riveters, with the electric drill, drill the holes in the chassis and rivet small parts, such as step irons, torque arms and equalizers. Another group attaches the springs, axles and other parts to the frame. A third group attaches the starter and generator motor, and the fourth group install the motor and its accessories and mount the radiator in place.

Engines are timed and regulated prior to being reassembled. This is true of all other working parts. Assembling, as it is indicated, does not involve adjusting.

*Special knowledge required.*—Assemblers must be able to recognize all the machine parts, know where and how parts are to be mounted, and what tools to use and how to use them. Previous experience in a machine or automobile shop is an asset as is a knowledge of the principles of applied electricity.

*Special skill required.*—Varying degrees of skill are needed depending upon the particular assembling job. The work of bolting and riveting fixed parts into place, such as braces, and supports of different kinds, requires only the skill to manipulate certain hand tools effectively, such as drills and riveting machines. These become largely mechanical operations requiring little judgment. The part fits in a certain place and no other. The place into which it is to be fitted is clearly indicated on the chassis, or by templates.

Another group of assembling operations involved in mounting the transmission, the steering apparatus and the motor, requires a higher grade of mechanical skill. In placing the transmission the worker must see that the gears mesh properly at the different speeds. It is necessary that the workers on the steering gear see that all the parts work in perfect alignment, and that the steering has no lost motion and readily responds to the operator. The workers who install the motor and starting and lighting apparatus must so install the apparatus that there is perfect coordination of the separate parts.

*How special knowledge and skill are obtained.*—Special knowledge is obtained only by working on the job and keeping in touch with new developments in the industry, such as starting, gear-shifting,

and lighting systems. School courses in applied electricity and mechanics are essential, if assemblers desire to keep abreast of the times in the newer developments of the industry.

### **The Woodworker**

See also Chapter VII, "Agricultural Implement Manufacturing."

*What the worker does.*—Woodworkers fit speedometers, gauges and other instruments on the dash, and install auxiliary seats, covers, running boards and hang doors and racks. The running boards are received cut to size, and the worker covers the surface with linoleum, binds the edges with aluminum strips, and places the boards in a press. Running and toe boards are mounted in the final assembling room.

*Special knowledge required.*—Woodworkers must be familiar with the various parts of the body and the ordinary dash instruments and methods of mounting. The same type of special knowledge is here required as of a trimmer and assembler in a cabinet shop or furniture factory.

*Special skill required.*—The essential requirements of these occupations are carefulness and neatness. The dash instruments must be fitted exactly and show no blemishes since they are in plain sight and are part of the "fittings" comparable to the cabinet work on a piano.

*How special knowledge and skill are obtained.*—An experienced cabinet maker soon develops the special skill required by following the directions of the foreman.

### **The Painter**

*What the worker does.*—In the painting department there is a wide range of work incident to the various stages of finishing from priming to the final coat and striping. Upon receiving the chassis, a "rough coat" is put on to prevent rusting. A large brush is used and little skill is required to successfully apply this first coat.

The body of the automobile receives many coats. The first, known as the priming coat, is usually applied by one rated as a laborer using a heavy bristle brush. This coat is rubbed down with haircloth or similar material. The process is known as "rough rubbing" and results in giving a smooth even surface for the subsequent coats of paint.



Following this a number of coats of paint are brushed on. After the paint has thoroughly dried, the striping, lettering and varnishing are done. The finishing coats must be brushed on quickly and with extreme care so that no brush marks are left. The body is then rubbed with pumice stone and water and polished by hand to obtain a lasting polish. After the painting operations are completed, the body is striped and varnished and a monogram may be painted on the door. The striping must be done straight and the monogram properly proportioned, and in the color chosen with the style of letter chosen.

*Special knowledge required.*—For the initial operation of painting the chassis little special knowledge is needed. For the rubbing, knowledge of pumice stone, rotten stone and the various degrees of hardness is essential. For the painting operations the painter needs to be familiar with the various paints and mixing methods for body coats for automobile finishing work and striping the painters should have, in addition to ordinary trade information concerning materials and methods, a knowledge of color harmony, style of lettering and effective ways of striping. All painters need a knowledge of the hygiene of the occupation.

*Special skill required.*—A steady hand and strong arm are required to a greater or less extent in all painting operations. For the painter on finishing operations skill is needed in the application of paint or the varnish on with long brush strokes, quickly and evenly. The rubber must rub the part smoothly and evenly. After the rubbing, he brings up a polish by drawing the open end of the cloth fully over the varnished surface.

*How special knowledge and skill are obtained.*—For the painting operations, skill may be gained on the job by following the instructions of the foreman. For the final painting and varnishing operations, a thoroughly skilled painter and varnisher who has learned his trade by serving an apprenticeship, is required.

### **The Upholstery Workers: Cutters, Trimmers and Finishers**

*What the workers do.*—The most important occupation in the upholstery department is that of cutter. Each season the cutter makes a set of designs for the types of automobiles which his department makes. From these designs he lays out his pattern on the leather and cloth and cuts out the pieces.

ting the leather and cloth stock. Preparing the pattern is the most important part of his work. The parts for which stock must be cut are the seats, the cushions, the top, the curtains and the extra tire covering.

The trimmer prepares seats for the leather or cloth coverings by mounting springs over the wooden frame, and filling in with a layer of hair, after which he drapes the material received from the cutter in folds over the seat bottom and back. He binds the edges with tape and tacks the tape to the woodwork.

The top maker lays out his work over the bows of the top. After the top is made it is lined on the underside with cloth or a prepared fabric, and set in place with curtain studs. It is held in place on the bows by being stitched down to cross pieces of heavy canvas.

Machine stitching is usually done by women. They do ordinary machine stitching on a power machine, hemming side curtains, tire covers, cloth parts and leather or water-proofed material used for tops.

*Special knowledge required.*—The cutter must be able to visualize his work before putting it in place. He has no pattern to follow, and whether or not he makes an artistic effect, as in the case of an upholstered back, depends upon his ability to draft the proper pattern for the covering fabric. The trimmer must have a thorough knowledge of the trade. He must be able to lay out material to the best advantage with the least waste, and must also follow the adapted patterns. The top maker must have a thorough knowledge of covering fabrics, their composition and strength, and a knowledge of the approved methods of top construction. Machine stitchers must be able to thread, operate and control power sewing machines.

*Special skill required.*—The cutter must know the technique of pattern drafting and "laying out," and stock cutting. The trimmer must be a thorough master of fabric draping and general upholstery. The top maker must be able to lay the fabric smoothly and firmly over the bows and attach it in place.

*How special knowledge and skill are obtained.*—The cutters have usually learned the trade of upholsterer. The trimmers and top makers obtain their knowledge and skill on the job under the direction of the cutter. The sewers must have a knowledge of machine sewing before coming to the work.

### **The Electrician**

*What the worker does.*—The electrician must install wires to lights, starter, horn, ignition system, fuse boxes and from the battery, generator, motor and magneto. Cutting cable to length and preparing the terminal is done by worker under the direction of the electrician.

*Special knowledge required.*—The electrician must have thorough knowledge of wiring, as related to dash instruments, batteries, lights and ignition; of the storage battery system, lights, ignition and gear shifting, and of various ignition systems.

*Special skill required.*—The technical skills are subordinate to technical knowledge. The electrician must mount each wire on its proper path, connecting each with its proper unit at the battery and with the instrument board at the other.

*How special knowledge and skill are obtained.*—Special knowledge can be obtained by working on the job under the direction of a foreman. The required aspects of special knowledge are obtained only by the serious study of applied electrical theory.

### **The Final Assembler**

*What the worker does.*—The finishing operations on the automobile body are performed by the final assemblers, who bolt the body into place, on the chassis attach tires, fenders, run toe boards, fit the hood and top, and mount tonneau, side lights.

*Special knowledge required.*—Final assemblers must be familiar with automobile parts and accessories and where and how they should be assembled.

*Special skill required.*—The ability to put on a part neatly without scarring, or otherwise injuring it, or any part of the body is the prime requisite. Skill of hand which comes through practice is required.

*How special knowledge and skill are obtained.*—By working on the job under the direction of a foreman, the necessary knowledge and skill are obtained.

### **The Tester**

*What the worker does.*—When the automobile chassis is finished, it is given a road test to determine whether the engine, transmission, starting devices, and other parts which make up the motive power, are in perfect working condition. The tester drives the machine on the road under all sorts of conditions and reports to the head tester the parts which need adjustment, replacing or repairing. After the noted adjustments have been made, a short final test is given.

*Special knowledge required.*—A knowledge of the principal parts of an automobile and how these parts should operate, is essential. The tester must also know how to make ordinary adjustments on the road, so if any trouble develops he may get the automobile back to the factory.

*Special skill required.*—The skill to detect engine trouble or other defects by watching the operation of the motor, the transmission and ignition, and all moving parts of the car while it is in motion, is essential. This requires a keen eye and well developed sense of hearing.

*How special knowledge and skill are obtained.*—Special knowledge and skill may be obtained by actual road testing under the direction of the head tester. In most instances the testers have had no previous experience in the work. Testers would be greatly profited by a knowledge of practical mechanics and applied electrical theory.

### **The Machine Operator**

#### **The Blacksmith**

For the trade analysis of these workers in this, and other industries, see Chapter VIII, "Railroad Repairing, Machine Tool Manufacturing and other Metal Industries."

### **SURVEY COMMITTEE RECOMMENDATIONS**

The automobile industry in Richmond, being primarily an assembling industry, gives employment to relatively few skilled woodworkers, body makers, upholsterers and machinists. Suggestions concerning trade education for machinists are recorded in Chapter VIII.

The majority of the workers in the industry are assemblers and testers. This work is performed largely by young men. Because of the widespread introduction of electrical devices as a part of automobile construction, practically all workers are required in some way, either directly or indirectly, to have knowledge of the basic theory of electrical construction related to the automobile. The workers have, as a rule, completed the high school physics course, which is prerequisite to this work.

Evening school courses in applied electricity on a traditional short unit basis should be provided for workers in the industry. Such courses should be taught by an instructor who has the necessary technical education in applied electricity. Some of the units which should be included in the series are: Wiring as related to dash instruments, batteries, lights, and ignition; storage battery as related to lights, ignition and starting; and various ignition types.

The trade recognizes that the electrical possibilities in automobile control and operation are yet in their infancy. Men, thoroughly conversant with the fundamentals of electricity, are eligible for promotion and advancement.

## CHAPTER V

---

### INDUSTRIAL EMPLOYMENT: WIRE FENCE MANUFACTURING

*Production.*—Among the products of the iron and steel industry, wire occupies a prominent place. More than half a million tons of wire, valued at over \$35,000,000, were manufactured in the United States the year previous to the taking of the 1910 census of manufacturing. Of the states prominent in wire production in 1909, Indiana ranked sixth, producing 24,623 tons valued at \$1,101,380. Much of this product went into the manufacture of wire fence.

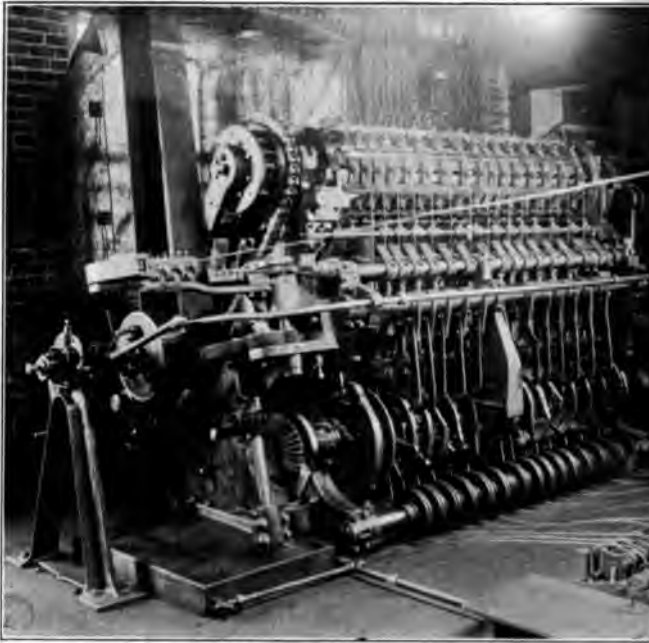
*Richmond's place in the industry.*—While Richmond does not manufacture wire, it is noted for the manufacture of wire fence. The one plant located here employs from 130 to 140 men, working two shifts daily, in supplying the demand for this important commodity. The product is distributed throughout the United States, going largely to farmers, ranchers, and stock and poultry raisers. Shipments of wire fence are made in car load lots and exceed in tonnage any other commodity made in Richmond.

#### How Wire Fence is Woven

*Stages in manufacture.*—Wire fence is woven on an automatic machine designed to weave either single or double width of fabric. The machine weaves vertical wires across horizontal ones at regulated stay spaces. The operations of the machine include the feeding, severing, looping and twisting of the wire.

*Strand and stay wires.*—The galvanized wire is first thrown over drums or reels, from twelve to twenty-one in number, according to the style of fence being made. These drums are fastened to the floor at set distances from the machine. All but one contain the strand wire which takes a horizontal position in the finished fence, while the other bears the upright or stay wires.

*How the wires are fed on the machine.*—The strand wires pass through an oil bath over guides into the machine and from the machine into a drum known as a pull up drum. This drum pulls



Strand and Stay Wires Entering the Loom. The Streaked Line  
Picture is the Stay Wire.

up the wire after each cycle of operations. The stay leaving the reel, also passes through an oil bath but machine transversely through a guide. Both strand and are fed into the machine simultaneously.

*Looping and twisting.*—When the infeed of wire completed for one operation, the looping and twisting place. The stay wire is fed across a series of strand wire guides or funnels, by means of a feed roll mounted on the side of the machine. The stay wire is ejected from the machine by a series of lifters and carried over against the strand wire which time the beaters press the wire down against the strand wire to permit the looping process to occur.

*Twisters on single and double fabric.*—The twisters on the width of fabric are so arranged as to operate with the looping twisters, so that the twisting and looping take place in the center of the machine and ends with the outer twist on the side of the loom. When the machine is making double fabric, the center cutter is set in the middle of the machine, and c



Wire Being Drawn into the Fence Weaving Machine. The Hollow Drum at the Rear Bears Strand Wire; the Reels, Upright and Stay Wire.

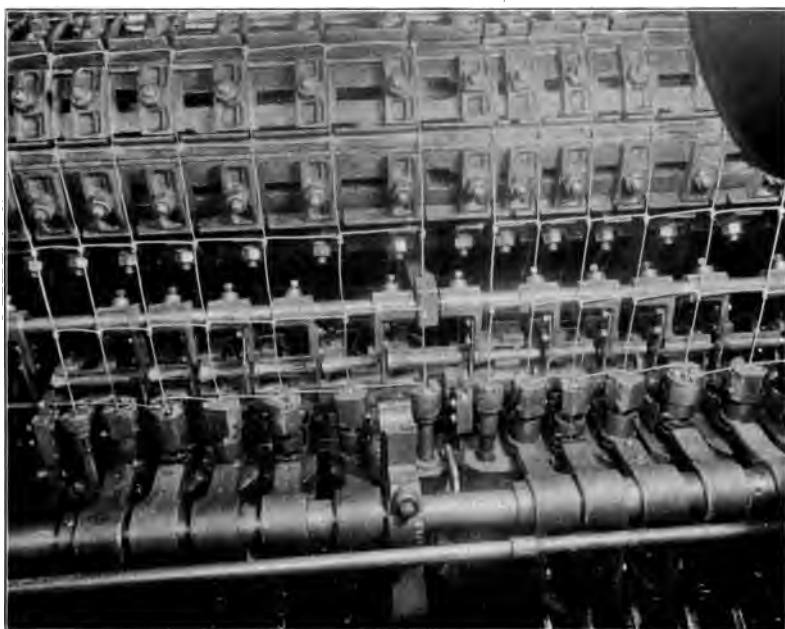
there is a marginal twister driven by spur gearing. Immediately after the center cutter severs the stay wire into two parts, the marginal twister, and an adjacent one known as a looping twister, being intergeared, operate simultaneously in completing the twisting process.

*Direction in which twisters operate.*—Whether the machine operates on single or double fabric, the operation starts at a central point and works progressively toward the outer margin, the twist-ers on each side of the center knife, except the marginal twist-ers, revolving in opposite directions.

*Final operations.*—When severing, looping and twisting operations have been completed, the fence passes onto the pull up drum, which raises it the necessary height or stay space. When a sufficient number of rods have been woven, as indicated by a counter on the loom, the operator throws the machine out of gear, and, together with his helper, severs the wire with plyers and removes the completed bale from the reel.







**Looping and Twisting.** Starting from the Base of the Picture at the Center,  
Note the Various Stages in the Twisting Process.

### Occupations and Number Employed

	Males
Foremen, weaving department.....	2
Loom operators.....	42
Loom operators' helpers.....	32
Machinists (see Chapter VIII).....	4
Electric welders .....	4
Inspectors.....	2
Inspectors' helpers.....	2
Laborers and checkers.....	32
Cranemen.....	2
Sealer.....	2
Stockkeeper (see Chapter XVII).....	1
Foremen, Warehouse (see Chapter XVII).....	1
Total.....	126

It will be noted that of the 126 men employed on the two shifts, almost one-third are engaged in operating power looms. Together with their helpers, the loom operators constitute ap-

proximately fifty-seven per cent. of the total number of e  
In numerical importance, laborers and checkers are ne  
erators' helpers.

#### **Facts Common to All Workers**

*Mental and physical requirements.*—The mental and characteristics required for workers vary. The help laborers need to be physically strong as part of the help is lifting heavy bales of wire, and part of the laborer's trucking and moving the bales from place to place. The also needs to be strong, for in many instances, he as helper in taking bales off the loom.

*General education required.*—Fence weaving is not a t most of the weavers have been taught the occupation or As the work is done largely on a piece basis, most of 1 need at least a common school education which will enal to read, write and figure overtime, and to read scales and c

*Promotion.*—There is a narrow range of promotion on jobs. A new man taken on as a helper may work into operator's job. In one case a loom operator became



**Reeling the Woven Wire.**

spector. There is slight chance of securing a position as foreman since they are very few in number and are usually chosen from the outside.

*Source and selection of workers.*—The men are hired by the foremen of the various departments on personal application, or on recommendation by the superintendent to the foremen. A laborer in the firm may become a helper.

*Seasonableness.*—The busiest time in this industry is from the middle of August until June, when two shifts are employed. During the summer the factory shuts down for a couple of weeks.

*Hours of labor.*—The employees in this industry work sixty hours a week. The night men work twelve hours per night for five nights per week, and the day men ten and one-third hours on all days except Saturday, when they work eight and one-third hours. Following the usual custom in Richmond, one hour per day is allowed for dinner.

*Nativity and former occupations.*—The majority of the employees of this industry are native born. Some of them have been farm laborers or farmers in the vicinity of Richmond. They are nearly all local men. The workers are not unionized.

*Hazards and inherent character of work.*—The working conditions in this industry, in the main, are good. In one of the rooms adapted for the purpose of weaving, the light was poor, requiring the use of artificial light. The weavers may sit at their work. There are practically no dangers from machines. It is possible for an operator or helper to be cut by flying wire pulling loose from its moorings, but this rarely occurs.

### **The Foreman, Weaving Department**

*What the worker does.*—The foreman has general supervision over all machines and occasionally inspects them to see if they need repairing. He also gives the order slips to the weavers and sees that all work is done according to standard specifications.

*Special knowledge required.*—The foreman must have a detailed working knowledge of machine construction and operation, such as is usually possessed by a master mechanic.

*Special skill required.*—The foreman must be able, if necessary, to set up and operate all the types of looms used.

*How special knowledge and skill are obtained.*—The skill and knowledge are obtained by previous experience in the operation of a loom, acquired on the job.

### **The Loom Operator**

*What the worker does.*—The work of the weaver described, for the most part, in that section giving a description of wire weaving. The principal duty of the operator is to run the machine and to see that it is turning out the work as required. He must oil it, and keep the parts sufficiently tight. Each operator sets up his own machine, fixing the number of looms and twist-ers according to the height of fence being woven. The weight of wire is to be completely changed from that used on the last bale woven, the operator must change the size of the looms and twist-ers. If a different weight of strand wire is to be woven, he must re-thread his machine throughout. All repairs are made by machinists.

The work is usually routed for the week from the office to make the most economical use of the machines. One operator may work on one style of wire for the entire week, or he may on occasion warrant, work on specialties making a number of different styles. The work of the operator is reckoned on a piece-work basis. When a bale of fence wire has been made, the operator notes on a piece of paper the number of the loom and the number of rods in the bale. This is to aid the weigher in keeping his records of the day's production and the amount produced by each operator.

*Special knowledge required.*—The operator must be familiar with certain trade terms. The wire size is labeled but the operator learns to judge it. He must be able to read order slips, such as 10-47-12, meaning ten strands, forty-seven inches high and twelve inches between stays.

*Special skill required.*—In addition to the skill required to operate the machine, the operator needs the skill necessary to thread his loom. Threading consists in taking off the old wire, putting on new, passing them through an oiling device over guide wheels, up through the twist-ers over a pull up mechanism and onto the reel. He must also know how to cut the bale, take it off the loom and replace the reel in the proper position.

*How special knowledge and skill are obtained.*—The skill

special knowledge must be acquired while serving as a helper. An ordinarily intelligent man can be taught to operate a loom in from ten days to one month's time. In this period of time, however, he could not learn how to set up the machine for new work.

*Wages.*—Operators work on a piece basis. Their wages are said to range from fifteen to twenty dollars per week and in rare instances to twenty-five dollars a week. All weavers are guaranteed at least seventeen and one-half cents per hour.

### **The Loom Operator's Helper**

*What the worker does.*—The helper finds the ends of the bales of wire and gets the wire ready for the welder to splice together. He puts on new bales over the drums and helps the operator remove the completed bale of fence from the machine and replace the reel in position. It is also necessary for the helper to watch the wire and keep it from becoming tangled. He may run the weaving machine, at short intervals, during the absence of the operator.

*Special knowledge required.*—As the helper picks up the wire from piles near the loom, he must know the different sizes of wire. Keeness and alertness in watching for tangles is also necessary. He also needs some knowledge of the loom to enable him to throw it in and out of gear.

*Special skill required.*—The skill necessary to take off bales and to put new ones on the loom; and also to prevent tangled wire and to remedy tangles when they occur is essential.

*How special knowledge and skill are obtained.*—The skill and knowledge for this work are gained by observation and through instruction by the operator. At short intervals the helper is sometimes allowed to operate the loom.

*Wages.*—Earnings and premiums depend on the operator's output. The helper's wages are on a piece basis and are said to range from ten and one-half to sixteen dollars per week.

### **The Machinist**

The work of the machinist is described in Chapter VIII, "Railroad Repairing," etc.

### The Electric Welder

*What the worker does.*—The purpose of welding the together is to enable the machine to operate continuous saving the time of the operator in shutting down the machine and re-thread it. The average time required for threading is 10 minutes, as compared with one minute for welding. The work is done by young men, each one tending 140 reels. The work is very simple. The worker takes the two ends of wire, clamps them in a clamping device, and turns on the electric current, thus making the weld. He then tests the weld by twisting it a few times, after which he grinds off the surplus metal until the wire is smooth.

*Special knowledge required.*—The electric welder must have knowledge of how long to apply the current so as not to burn or crystallize the wire. Sufficient knowledge of the welding machine so as to dismantle and assemble it, is also necessary.

*Special skill required.*—Skill lies in adjusting the machine in regulating the duration of the electric current. Worker must be able to trace a short circuit.

*How special knowledge and skill are obtained.*—Skill in welding may be acquired in about one day's practice on the job.

### The Inspector

*What the worker does.*—After the wire has been woven in a roll, an occasional roll is inspected to see if there are flaws and if it is up to standard specifications. The roll of fence is unwound and stretched by a semi-automatic device on a four-tier wire frame. The inspector scans each tier for broken strands, strands not parallel and actual weaving defects. When defects are discovered, the roll is sent back to the weaver, whose number is indicated on the description card, attached to the roll, and the defects are remedied.

*Special knowledge required.*—The inspector must have a thorough knowledge of the various kinds of woven fence, trade designations of wire, sizes and weave meshes, and standards of what constitutes good weaving.

*Special skill required.*—The inspector needs the ability to detect quickly any imperfections in the woven fence such as

crooked, or broken strands, too few strands, or other imperfections. He must also be able to mount the roll of woven fence on the reel, run the stretcher and rewind the wire.

*How special knowledge and skill are obtained.*—The skill and knowledge required are obtained by loom operating. The present inspector was a loom operator. He was chosen on account of his knowledge of good weaving and ability to detect flaws.

### **The Inspector's Helper**

*What the worker does.*—The helper assists in placing on the reel the bale of wire chosen for inspection, and spreading it on the inspecting frames. He trucks the bale from the weaving to the inspecting room, drops it on the platform, loosens the stay wires and rolls the bale onto the reel. He then clamps the end wires to the cable, which, when actuated, draws the fence over the first, second, third and fourth tiers, respectively, of the inspecting frame, which is twenty rods long. The inspector examines the fence thus stretched, and, when thoroughly inspected, the helper rewinds the fence into a bale.

*Special knowledge required.*—The helper works directly under the guidance of the inspector. The special knowledge required concerns the routine of procedure in stretching the wire on the frame and removing and rewinding it.

*Special skill required.*—Since the inspector controls the motor which drives the drum about which the cable is wrapped in stretching the wire, as well as all other controls, the skill required of the helper concerns only trucking and stretching the fence on the inspecting frame.

### **The Laborer and Checker**

*What the laborer does.*—The laborer is employed in the shipping department and the warehouse. He trucks the woven bales of fence from the loom to the scales and then to the cars. He keeps stock fence in the warehouse, unloads bales of wire and loads tables of wire fence which are moved from place to place by the overhead crane.

*What the checker does.*—The checker is employed in the shipping department and warehouse. He enters in a record book, the



weight of each bale of fence loaded into the car, sees that is the kind called for in the order, and that the correct number of bales of each kind are loaded in the car. The laborer acts as a checker in recounting.

*Special knowledge required.*—Both laborer and checker have a knowledge of the company forms and various types of woven wire fence.

*Special skill required.*—Both workers must be able to handle heavy bales of wire, using ordinary hand truck. The skill required is identical with that of the stevedore.

*How special knowledge and skill are obtained.*—Knowledge and skill are obtained by working on the job under the guidance of experienced men.

### The Craneman

*What the worker does.*—The craneman operates an overhead electric crane in the warehouse in moving wire bales from one place to another within the warehouse and also to the loading platform. A broad wooden platform, called a table, is loaded by the laborer with bales of wire fence; this is attached to the crane cable. Upon signal, the crane operator moves the table to the intended destination.

*Special knowledge required.*—The craneman must thoroughly understand the crane controls, and also how to keep the crane in good repair.

*Special skill required.*—The skill required concerns both the crane directly over the load to be carried, and the operating control devices. Alertness, good eyesight and strict obedience to orders are necessary requirements.

### The Sealer

*What the sealer does.*—The loom operator affixes a tag to each bale of fence, indicating style number, number of rods and weaving machine number. Each bale, so tagged, goes to the sealer. He removes the tag affixed by the loom operator, weighs the bale and records on a form sheet the weight and number of rods, style and weaving machine number. If the weight differs above or below the three-pound marginal standard set, the sealer sends the bale to the inspector for remeasurement.

*Special knowledge required.*—The sealer must have a workable knowledge of the company forms, of wire sizes and fence styles, as well as the scales and weighing standards.

*Special skill required.*—The sealer must be able to move bales of wire quickly, to weigh quickly and accurately and also accurately record weights and standards on the company forms.

*How special knowledge and skill are obtained.*—The necessary knowledge and skill may be obtained on the job through instruction given by the foreman.

### **The Stockkeeper**

### **The Warehouse Foreman**

For the analysis of the work of stockkeeper and warehouse foreman, see Chapter XVII, "Mercantile Traffic."

## **SURVEY COMMITTEE RECOMMENDATIONS**

The wire fence industry in Richmond gives employment to a few skilled machinists. Educational deductions about training for machinists are reported in Chapter VIII, "Railroad Repairing," etc.

The majority of the men in this industry are highly skilled power loom operators and helpers. The skill necessary for fence weaving can be obtained only by actual work in the industry.



## CHAPTER VI

---

### INDUSTRIAL EMPLOYMENT: LAWN MOWER MANUFACTURING

The lawn mower industry is among the oldest in the city of Richmond and since its inception some sixty years ago, has made steady progress. The two establishments engaged in the manufacture of lawn mowers make three distinct types of machines; hand, horse and power mowers. Of the three, the hand lawn mowers greatly exceed the others in number and value of output. One of the establishments manufactures fifty different styles of hand lawn mowers. The industry, employing about 154 men in its manufacturing phases, may be considered one of the representative types of production of Richmond.

#### **Manufacturing Routine**

*How lawn mowers operate.*—The construction of a lawn mower at first glance appears very simple, but on analysis is found to be made up of a large number of parts, each of which performs a certain definite service. The lawn mower cuts grass with a snipping motion like a pair of shears. Lawn mowers are equipped with double edged, spiral knives set on a cylinder, which, by means of gears, rotate in contact with the edge of a fixed knife blade or cutting bar. The cutting bar is placed at a tangent to the cylinder at a regulated distance above the grass to be cut, usually about an inch. In operating, the knives clip off the grass on the principle described.

*Parts in lawn mower construction.*—To construct the various parts in this machine requires a large number of operations, chief of which concern themselves with pattern making, machining of small parts, assembling, painting, testing and boxing. Many of the parts are cast and require a number of machine processes. As an index of the many parts which are required in lawn



mower construction and the various operations to which they are subjected, the following list of parts or operations involved is appended:

**Shafts—**

- Drilling of shafting
- Broaching (widening)
- Filing burr off broach

**Blades—**

- Cutting and punching blades
- Forming blades

**Spider—**

- Straightening of spider under trip hammer
- Reaming
- Facing
- Punching

**Reel building—**

- Assembling the reel blades and spider parts
- Riveting, gauging, drilling
- Pinning and straightening reel
- Ball bearing assembling
- Rough grinding

**Making metallic sleeves—**

**Pinion and pawls—**

- Reaming pinions
- Cutting pawls and grass catcher blades
- Hardening pawls; setting screws

**Cutter bar (knife blade)—**

- Cutting and punching blade
- Riveting blade to cast bar
- Straightening bar
- Machining, facing and tapping end of bar
- Grinding front edge of blade
- Grinding face of blade

**Disc machining—**

- Milling the spindle
- Drilling for ball cups
- Reaming for shrub guard
- Setting ball cups
- Drilling oil hole
- Cleaning for assembling room

**Shrub guard—**

- Turning end of shrub

**Cast wheels—**

**Machining**  
**Reaming**  
**Facing**  
**Running**

**Final assembling—**

**Rough assembling of parts**  
**Adjusting and filing**  
**Fitting of wheels**

**Painting—**

**Priming coat**  
**Finishing coat**  
**Padding**  
**Striping**

**Rollers—**

**Putting on rollers and running of machine to ease up part  
 being painted**

**Packing boxes—**

**Machine nailing of sides**  
**Machine nailing of bottom**  
**Packing and cleating of box and inserting direction sheet**  
**Machine nailing of top**

**Handles—**

**Stenciling**  
**Attaching cross piece to handle**  
**Varnishing (dipping)**

**Iron handle braces—**

**Cutting and punching**  
**Forming**  
**Rattling (cleaning)**  
**Dipping**  
**Brush work**

### **Occupations and Number Employed**

**Foremen machine shop**.....  
**Pattern makers (see also Chapter VIII)**.....  
**Machinists or tool makers (see also Chapter VIII)**.....  
**Grinders**.....  
**Formers**.....  
**Drill press operators (see Chapter VIII)**.....  
**Punch press operators (see Chapter VIII)**.....  
**Reamer operators (see Chapter VIII)**.....  
**Facing operators (see Chapter VIII)**.....

**Occupations and Number Employed—Continued**

	Males
Milling operators (see Chapter VIII) . . . . .	..
Forge workers (see Chapter VIII) . . . . .	2
Foremen of assemblers . . . . .	2
Assemblers . . . . .	16
Painters, strippers, padders, dippers and stencilers . . . . .	29
Inspectors . . . . .	2
Box makers . . . . .	6
Roustabouts (not analyzed) . . . . .	4
<hr/>	
Total . . . . .	154

*What the table shows.*—The table shows that of 154 employees reported in representative occupations by the two establishments more than one-half are engaged in some form of machine operating, grinding and bench work. Of the other factory occupations, painting is the work followed by the largest number with assembling next in numerical importance.

**Facts Common to All Workers**

Before analyzing the many occupations involved in lawn mower manufacture, there are certain points which may be treated in general.

*Routing of orders.*—Orders are prepared in the office on typewritten sheets, a copy of each sheet going to the foreman of each department. The foreman tells employees the number of each part to be made. Most of the work which has to do with machine operating is on a piece basis. The amount accomplished by each worker is checked up at the end of the day.

*Mental and physical requirements of workers.*—The workers need to have ordinary physical strength. No heavy parts are machined. Most of the work consists of operations on small and light parts. No great physical strength is needed such as is required for heavy machine operations.

*General education required.*—Managers consider it desirable for men to have a common school education. Many of them need a knowledge of reading, writing and arithmetic to keep their own time on their respective piece work jobs.



*Promotion.*—There is no definite scheme of promotion. The chances for promotion in this industry are slight. Occasional man is promoted from one machine to another. This enables him to earn higher wages. At rare intervals a worker may be raised to a foreman's position if the holder dies or leaves the employ of the company. Superintendents say that the factor governing promotion is the ability of the workman to accept increased responsibility. Of the three foremen employed, two come to their positions from the outside, while the third has worked up through the assembling room to foreman of the

*Source and selection of workers.*—The workers, in practically all cases, secure their positions by personal application to the foremen or to the superintendent of the factory, since no employment bureaus of any kind are maintained in Richmond. Men who have had machine shop experience, or who are machinists, are usually given preference over those who are novices. Most of the operations require a type of skill acquired in a short time. The machinist's occupation and a few operations in pattern making, tool making and striping, require men who have learned their respective trades.

After a man has been selected for a position, he is put through a "trying out process." The superintendent watches him closely every day for about a week and within that time determines whether the man is going to be able to do the work required. A foreman or gang boss puts a new man to work, instructs him in his duties and teaches him how to set and operate the machines. While a new man may spoil material by inefficient machining, the parts which are machined are usually small and of little value.

*Hours of labor.*—The employees in the industry work a ten hour day. One establishment, however, closes shortly before noon on Saturday, making a working week of fifty-five hours compared with a fifty-nine hour week in the other.

*Seasonableness.*—Lawn mower manufacturing, while not strictly a seasonable industry, has a busy season extending from September until May. During the slack season, while the machines are not shut down entirely, some of the workers are retained to help in repairing machinery and in invoicing. The slack season is of only a few weeks duration in midsummer.

*Hazard and inherent character of work.*—In this industry

chines are usually well guarded but are crowded very closely together. Owing to the lack of proper placing of material and to the fact that parts to be machined must be lifted from the floor, workers lose much time and energy. This loss of time and strain on workmen could be overcome by placing parts on rolling trucks of the proper height.

*Wages.*—Most of the workers are paid on a piece work basis. The average daily wage was said to be about two dollars and seventy-five cents. Some workers were said to receive from three and one-half to four dollars per week.

### **The Machine Shop Foreman**

*What the worker does.*—The foreman of the machine shop acts also as superintendent. He has charge of the hiring of the men as well as direct charge of all machine operations. All orders come directly to him as well as to the foremen of the different rooms.

*Special knowledge required.*—The foreman needs a complete understanding of every operation connected with lawn mower manufacture; a slight knowledge of metallurgy; and a thorough understanding of the operation of every machine used in the shop.

*Special skill required.*—The foreman needs the skill necessary to operate any machine in the shop. Oftentimes in breaking in a new man he must teach the man how to operate the machine. At first the foreman or a skilled operator must set up machines for new men.

*How special knowledge and skill are obtained.*—Skill and knowledge must be gained elsewhere, as there is no definite provision for training or promotion in this industry in Richmond.

### **The Pattern Maker**

Among the trades in the manufacture of lawn mowers, none exceed in importance the work of the pattern maker. He makes the patterns from specifications supplied by the office. These patterns are first made in wood and then usually in brass or aluminum, because the wood patterns will shrink, change in shape and wear out with little use. The former material is used on account of its durability and the latter on account of its lightness. The pattern is a replica of the lawn mower part made to size from

which a mold is formed in sand. The cavity corresponding to the pattern is filled with molten iron, which on cooling takes the shape of the original pattern. For details see section on the pattern maker in Chapter VIII, "Railroad Repairing," etc.

### **The Machinist and Tool Maker**

The machinist and tool maker are, in their respect, more skilled than the pattern maker. The machinists do all the work on machines, grind cutting tools, do machine work, make patterns and other light machine operations. They also make shop tools such as jigs, snap gauges, and test pieces. For details see section on the use of the machine operators in the common machine operations. For details see section on the machinist and tool maker in Chapter VIII, "Railroad Repairing," etc.

### **The Grinder**

Among the more important machine operations in lawn mower manufacture is the grinding of the blades. The blades are first rough ground and then finished grinding.

*What the worker does.*—In this work the operator takes the blades and fastens it to a power driven clutch. The reel rotates rapidly against the grindstone which turns about one hundred revolutions per minute. The blades are moved back and forth against the grindstone until they are considerably well sharpened. During the operations a stream of water flows over the grindstone to prevent the loss of temper in the blades of the reel.

*Special knowledge required.*—The superintendent said that there were two things by which the operator was guided: The sight of the spark which enables him to tell whether the blades are ground evenly; the sound of the blades against the grindstone which enables him to tell when the reel should be taken from the frame.

*Special skill required.*—The operator needs the skill to see that the machine grinds the blade evenly and smoothly.

*How special knowledge and skill are obtained.*—Skill is gained only at the work.

*Promotion.*—In some cases workers are promoted from rough grinding to finished grinding.

### **The Former**

*What the worker does.*—The forming operation consists of making the handle brace by pressing a short straight bar of iron into a Y shape. At the broad ends it is attached to the running gear of the mower and at the narrow end, to the handle. The cold pressing process is followed. The operator takes the bar, lays it on the bed of a forming machine, places a die against it and starts his machine. By means of large gears sufficient pressure is exerted by the die coming in contact with the bar so that the bar is formed into the proper shape.

*Special knowledge required.*—The special knowledge required is limited to knowing how to place the material in the machine, apply the power and remove the formed part.

*Special skill required.*—Special skill is required in starting the forming machine. If started too quickly the gears will be stripped.

*How special knowledge and skill are obtained.*—The necessary skill is obtained only on the job. The skill is gained by repeating the operation again and again.

**The Drill Press Operator**

**The Punch Press Operator**

**The Reamer Operator**

**The Facing and Milling Machine Operator**

**The Forge Worker**

For the detailed analysis of the work and educational requirements of all these workers in this, or other industries, see Chapter VIII, "Railroad Repairing," etc.

### **The Assembling Foreman**

*What the worker does.*—The assembling foreman routes the work through his department and keeps up the output according to orders received from the office.

*Special knowledge required.*—He needs a thorough knowledge of all assembling operations as well as a knowledge of lawn mower construction.

*Special skill required.*—He needs the skill necessary to perform any of the assembling operations including adjusting bearings, filing blades, meshing gears, and reading direction sheets.

*How special knowledge and skill are obtained.*—By working through the various occupations in the department a worker obtains the required knowledge and skill.

### **The Assembler**

*What the worker does.*—In the rough assembling the worker takes the reel, cutter bar, side plates and wheels and assembles them roughly together. He then passes them over to the assembler at the next bench who tightens the parts and blades after trying them. The third operation consists in assembling on the pawls, pinions, wheel rims and washers, and final lubrication. This completes the assembling except the putting on of the wooden roller which is put on before the final inspection.

*Special knowledge required.*—The knowledge to tell if running parts are correctly adjusted and a knowledge of the name and use of each part in the lawn mower are necessary.

*Special skill required.*—The work takes the mechanic which may be described as quickness, deftness and accuracy in making adjustments.

*How special knowledge and skill are obtained.*—Special skill is obtained by working at the job, starting as a rough assembler and working into the more advanced assembling.

### **The Painter, Striper, Padder, Dipper and Stenciler**

*What the painter does.*—The painter places the lawn mower on a revolving circular table and lays on the paint with a thick brush. As he finishes painting one part and wishes to paint another, he revolves the table instead of the lawn mower. In painting the wheels the painter holds the brush against the wheel while he revolves the wheel rapidly.

*What the striper does.*—In striping, a short handled brush with long bristles is used. The stripes are made by drawing the brush in a straight or curved line across the part to be striped. No templates are used and the painter judges by his eye whether or not the stripe is straight or curved. This operation requires skill and is considered one of the most important in the painters' trade and is usually done by the room foreman.

*What the padder does.*—Padding, a comparatively

operation, consists in taking a cloth pad, dipping it in color and stamping it on the raised letters which are about the rims of the wheels.

*What the dipper and stenciler does.*—Wooden lawn mower handles are purchased already turned and are first dipped in a vat of thin weather proof varnish and then hung up on racks to dry. Following this the wooden cross piece is attached to the handle. Preliminary to varnishing, the handle is stenciled with the name of the company, or perhaps the trade name of the establishment where the consignment of lawn mowers is to be sent.

*Special knowledge required of all in painting work.*—The painter in this industry needs but little special trade knowledge as it is common rough brush work. The striper must have a very well developed color sense, a knowledge of colors, and a thorough knowledge of pigment mixing. The padder requires no special trade knowledge. The dippers must know how to recognize and obtain the proper consistency of varnish. The special knowledge required of stencilers relates only to the proper position of the stencil on the handle of the mower.

*Special skill required of all in painting work.*—The painter must be able to apply paint quickly, evenly and neatly on the metal surface of the mower. The striper should possess all the skill of the various branches of the painters' trade. This skill may or may not be gained through apprenticeship. The special skill required is the ability to make a straight or curved line quickly and artistically. This requires a steady wrist and very perfect muscular control and co-ordination. A padder need only the simple rudimentary manual skill involved in placing the pad upon the powder and then "padding" the letters. A dipper must be able to quickly immerse and remove the handle from the varnish, and the stenciler must put on the letters evenly with the proper spacing along the handle.

*How special knowledge and skill required of all in painting work are acquired.*—The painter may acquire all necessary knowledge and skill on the job in a short period of time. The striper's skill can only be obtained by long and continued practice. The skill required of padders, dippers and stencilers may be acquired on the job in a very short period of time.

*Hazards and inherent character of work.*—There is always

danger of poisoning by lead, wood alcohol, turpentine chemicals entering into the composition of paint. Pain and wrist drop are among the diseases which may be in this work.

### **The Inspector**

*What the worker does.*—After the lawn mower has been the roller attached and the running parts tried out on a table, so as to free them from any paint adhering, it is final inspection. The inspector tries out the reel by hand and if necessary tightens or loosens the adjustment. He attaches a tag to it and the mower is ready for shipment. The inspector keeps a tally check of the number of machines examined.

*Special knowledge required.*—For this work an inspector needs a complete knowledge of the running parts of a lawn mower.

*Special skill required.*—The skill to make necessary adjustments quickly and effectively is required.

*How special knowledge and skill are obtained.*—Only familiarity with the working parts of a lawn mower can the knowledge be acquired. The skill must be gotten by work.

### **The Box Maker**

*What the worker does.*—Three or four men operating the box making machines make the sides and bottom of the box. When the sides are first made, the operator holding two boards at right angles while an over-head arm on the machine falls on the boards and drives in nails at one blow. After the sides are attached, another operator puts on the bottom of the box in the same manner. The lawn mower is then placed in the box and is cleaned down by another workman. The top is nailed on by a third worker who operates another box making machine. The box is then ready to be sent to the shipping room, and the mower is sent to the box car.

## **SURVEY COMMITTEE RECOMMENDATIONS**

The lawn mower industry gives employment to highly skilled machinists, tool makers and pattern makers. Discussions relative to school training for these trades are in the conclusion to Chapter VIII, "Railroad Repairing,"

The other lines of employment in this industry are: Machine operating, including drill press, punch press, reamer, and facer; assembling, painting, striping and padding painting, dipping and stenciling, and box making. In all of these occupations, as practiced in the manufacturing of lawn mowers, the necessary skill and knowledge, according to the present standards and requirements of the trade, may be obtained on the job without any special technical school education.

The Richmond schools can, however, be of real service to machine operators and to the industry, by providing night school courses in machine operating and the general work of the machinist. Such courses, if taken by machine operators, would not only make them more efficient in their present work, but would afford an opportunity for those now confined to one machine, to learn to operate other machines, thus making promotion possible. Under present factory organization, machine operators do not become familiar with the operation of types of machines other than those which they operate. The evening school has a real responsibility in providing this opportunity.





## CHAPTER VII

---

### INDUSTRIAL EMPLOYMENT: AGRICULTURAL IMPLEMENT MANUFACTURING

The city of Richmond has long been known for its manufacture of agricultural implements. The first agricultural implements were made in Richmond in 1842. A patent was granted in the year 1858 to a manufacturer of threshers, and in the next year a holder of a patent for the manufacture of Hoosier drills made twenty-five "by horse power." He succeeded so well that a stock company was formed shortly after 1870 which gave employment to from forty to fifty men and with annual sales averaging \$114,000. The company manufactured one and two horse wheat drills.

The development of the industry has more than kept pace with the growth of the city. New types of implements have been produced, factories have multiplied, and in some cases combinations of factories have occurred. At present there are three large factories engaged in this work, employing in their various departments approximately one thousand persons, eight hundred of which are engaged in the manufacturing processes. Among the agricultural implements which are manufactured are threshers, silage cutters, corn drills, corn planters, hay balers and seeders.

#### Uses and Manufacturing Processes

*The threshing machine.*—The modern thresher stands as an often quoted but nevertheless true illustration of the possibilities reached by American invention along mechanical lines. It performs in itself the complete cycle of threshing operations; cutting the sheaves, feeding, separating the grain from the straw, winnowing and depositing the grain in stacks or loading it on wagons, and removing and stacking the straw.

In one type of thresher the sheaf is fed in at a feed mouth and passed into a high speed hollow cylinder armed with radial teeth, which, as the cylinder revolves, play between projecting teeth set




in a fixed concave or cylinder section. The concave is open and has in the rear an open grate so that a large part of the grain is separated from the straw at this point and conveyed to the fan. What is left is separated by further agitation secured by a vibrating separator, revolving beaters and shaking forks. These devices beat the straw and convey it to the rear of the machine. The separated grain drops through the perforated bottom of the separator, and with the grain coming from the drum, is carried to the fanning mill by a vibrating platform or conveyor immediately beneath the separator.

*Manufacturing the threshing machine.*—The first operations in the manufacture of a thresher are performed in the cutting room. The foreman makes out the bill of material which he gives to the man running the cut-off saw who cuts the stock into gross lengths. The cut stock then goes to the planer operator who planes it to the specified thickness, and from there to the rip-saw operator who rips it to gross width, after which it goes back to the planer or on to the moulder, or sticker, where it is reduced to the finished width. The “finished stick” now may undergo a number of operations. If it is to be tenoned, it goes to the tenoning machine; if it is to be mortised, to the mortising machine, or it may go to the boring machine to be bored. It may also be re-cut to net length.

The next operation for the “sticks” is the dipping. They are dipped in mechanically stirred paint which gives the priming coat. The pieces then go to the erecting room where they are placed on racks for the carpenters to use as needed.

In the erecting room the iron work is received from the blacksmith and machine shop. Here the separator body is built by the carpenters and the drum lining put on by the sheet metal liner. The separator body then goes again to the paint room, to be painted, varnished and stenciled.

From the erecting room the separator passes to the fit-up room and here the accessories and small parts such as the shoe, chaffer and sieves, tool box, cylinder, concaves, pulleys and belts, self-feeder, wind stacker, tailings and elevator, are mounted. The feeder and wind stacker are built in other departments but installed in the fit-up room. The machine is then tested under power and packed for shipment.





*Manufacturing ensilage cutters.*—The ensilage machine cuts up green corn stalks and blows them through a stack into a silo. The machine consists of a traveling apron or conveyor which carries the corn stalk between a grooved rod and a toothed roll against a disc provided with two or four straight steel knives. The disc revolves about twelve hundred revolutions per minute, the knives passing within one-fourth inch of a shear plate, which corresponds to one blade of a pair of scissors and which aids in giving a straight sharp shear cut. Each disc is also provided with four fan wings that make a blast sufficient to carry the cut corn stalks up a sheet metal stack attached to the cutter, and from the stack into the silo.

The ensilage cutter proper is made up of about twenty-five metal parts, some of which are cast and later machined before being assembled. Gears are cut and the finished machining is done in the machine shop. All the parts are assembled, the bearings made, and the entire machine set up and tested in the assembly department.

*Manufacturing hay balers.*—A baler is used to press loose hay or straw into square, smooth, bales. One type of machine consists of a traveling carrier which takes the hay up to a retarder and compressor which in turn delivers it to reciprocating rakes. The rakes, operated by an eccentric crank drive, compress the hay or straw still further and take it across a feed hopper. A hay guard, through which the rakes operate, keeps the material properly confined, while a feeding device forces the hay into a bale chamber. While the hay is shut off in the bale chamber a block falls automatically, and, by means of twin gearing, condenses the bales.

Unlike a thresher, a hay baler is made almost entirely of iron and steel. Gears, pulleys, shafting, bale board, bearings, and steel frames are the principal parts of the machine.

### Occupations and Number Employed

	Males
Mechanical expert.....	3
Foremen, woodwork operators (see also Chapter VIII)	3
Wood machine operators (see Chapter VIII).....	83
Foremen, machine shop.....	4
Machinists (see Chapter VIII).....	10
Blacksmiths (see Chapter VIII).....	27

**Occupations and Number Employed—Continued**

Tool makers (see Chapter VIII).....	
Machine operators (see Chapter VIII).....	
Foundry foremen (see Chapter VII).....	
Foundry workers.....	
Pattern makers (see Chapter VIII).....	
Sheet metal liners.....	
Babbit metal workers.....	
Tinners.....	
Foremen, erectors and testers.....	
Erectors, assemblers and testers.....	
Foremen of painters.....	
Painters.....	
Miscellaneous occupations (not analyzed).....	
Total.....	

*What the table shows.*—It will be noted from the table that more than one-third of the total number of workers are engaged in some foundry occupation. These workers are not engaged entirely on castings for agricultural implements, but also on machine work. Second to these occupations in numerical importance are the erectors or assemblers, almost twenty per cent. being engaged. In fact, the number employed in these two groups of occupations, coupled with the number employed as machine operators, constitute approximately two-thirds of all the workers in the manufacturing processes.

**Facts Common to All Workers**

*General education required.*—For all but the highly skilled trades a common school education is sufficient. In trade work that has to be laid out, such as in tinsmithing, a knowledge of arithmetic and solid geometry is essential. The foremen, machinists and tool makers need a knowledge of blue print reading. The tinsmith would profit by some instruction in the elements of geometry. The pattern maker's general education should include a course in mechanical drawing, blue print reading, plane and solid geometry, metallurgy, and general foundry methods.

*Promotion.*—A large number of foremen have worked their way through their respective departments. Usually, however

coming on the job they have had previous experience in agricultural implement concerns or in industries doing work similar to that in which they are now engaged. If a man shows himself capable, he is advanced as rapidly as possible. Workers at times are shifted from one department to another. This allows of a progression in jobs, but not a regular one and does not apply to all departments.

*Source and selection of workers.*—The employees are chosen by the foremen of the different departments. The men secure their positions by interviews. Occasionally an official of the company may recommend a man to a foreman.

*Seasonableness and overtime.*—The industry has no regular rush or depression periods, but the busiest period immediately precedes harvest, roughly from March to July. For about a couple of weeks in summer, a shut down may be made for repairs and the force then somewhat reduced. Many men from the building trades find employment in this industry during the slack building seasons. The working week is fifty-seven hours from October to March and fifty-five hours the remainder of the year. There is little overtime.

*Hazards and inherent character of work.*—The hazards involved in the industry are slight. The machines are properly spaced and fairly well guarded. The men stand at the work, working near windows where proper light is afforded them. The moulders and painters are exposed to the ordinary dangers of their occupations.

### **The Mechanical Expert**

*What the worker does.*—The work of the mechanical expert corresponds somewhat to that of "trouble hunter" in a telephone exchange. When a line of machines fail to work perfectly, or if certain improvements are not meeting popular demand, the mechanical expert is sent to find out the trouble. If a large consignment is sent out, it is customary for the mechanical expert to accompany it and watch the machines operate. In the operation of a machine the expert may notice a device not mechanically correct. He determines how such a fault may be overcome in the next year's models.

*Special knowledge required.*—A thorough knowledge of applied mechanics, a familiarity with various metals, stresses, strains and



other working knowledge of metallurgy, a knowledge of the working parts of most kinds of agricultural machines, and the part should operate, is essential.

*Special skill required.*—The skill to set up, adjust, and any part of any agricultural implement is necessary.

*How special knowledge and skill are obtained.*—The knowledge of agricultural implements may be best obtained in the industry, but the theoretical knowledge necessary may be obtained by a technical school education.

### **The Foreman, Woodworking Operators**

See also Chapter IV, "Automobile Manufacturing"

*What the worker does.*—The foreman receives his orders in the office on typewritten slips of paper giving the number to be cut, and their dimensions. He lays out all new work and requires the reading of blue prints. By means of the blue he makes a master pattern which is used as a guide by employees. The rip saw, planer, moulding machine, mortising machine, jointer and other woodworking machines are set up by the foreman who must be able to operate them all.

*Special knowledge required.*—The foreman needs a knowledge of all woodworking machines, their operation, to regulate and fit the different cutting tools and how to file saws. He must be able to read blue prints and from the working models which are used as templates. He should be able to tell how long a machine operation should take and evaluate the quality of work done on each machine.

*Special skill required.*—The foreman needs the skill to operate any of the machines. He should be able to direct men intelligently.

*How special knowledge and skill are obtained.*—The special knowledge must be obtained before coming on the job, and is usually gained by previous service in a woodworking mill.

### **Wood Machine Operators**

Sawyers and operators of planers, joiners, moulders, etc., are required in the agricultural implement industry. For training, see Chapter IX, "Musical Instrument, Casket and Box Manufacturing."

### **The Foreman, Machine Shop**

*What the worker does.*—The machine shop foreman lays out the work for machinists, machine operators, vise men and other employees in the shop, indicating exactly what is to be done, as well as the time allotment. He carefully watches the output and inspects all work.

*Special knowledge required.*—A thorough knowledge of the machinists trade, including the knowledge of blue print reading, is required.

*Special skill required.*—The skill necessary to operate and instruct an operator on chuck and engine lathes, Gisholt machines, small boring mills, drill and punch presses, milling machines and other machines found in the ordinary machine shop, is required. The foreman needs the ability to advise and instruct about parts of separators, silage cutters and balers, the proper balance of such parts as separator discs, baler fly wheels, and the building of separator cylinders and other work distinctive of this industry.

**The Machinist**  
**The Blacksmith**  
**The Tool Maker**  
**The Machine Operator**

For the trade analyses of these workers in this, and other industries, see Chapter VIII, "Railroad Repairing," etc.

### **The Foundry Foreman**

*What the worker does.*—The foundry foreman receives his orders from the office giving the number of castings of each pattern to be made. He gives these orders orally to the men. The orders usually call for from fifty to seventy-five castings. The work being on a piece basis, each man keeps a record of his production. This record is also kept by the timekeeper of the foundry. The foreman advises the men about their work, the methods to follow and the materials to use. He does not perform any of the operations, as is common for foremen to do in other departments, but confines his duties solely to the executive side of the work.

*Special knowledge required.*—A practical knowledge of all foundry processes and a knowledge of certain automatic foundry machines, such as automatic squeezers and rappers, is essential.

The foreman needs a thorough knowledge of moulding also needs a knowledge of the proper proportion of each constituent in a cupola charge.

*Special skill required.*—The foundry foreman necessary to enable him to direct a force of men who ways amenable to orders. He must also be able to moulder how to go about his work. This requires involved in any of the moulding operations.

### **The Foundry Workers The Pattern Maker**

Moulders, moulders' helpers, core makers, sand cutters, tumblers and laborers and pattern makers are this industry. For trade description see Chapter VIII "Repairing," etc.

### **The Sheet Metal Liner**

*What the worker does.*—Certain parts of a separator lined with metal to reduce wear. The sheet metal is the panels and drums of the separator with thin sheet metal applied with nails.

*Special knowledge required.*—This work requires only edge necessary to lay and tack small pieces of sheet wood.

*Special skill required.*—The skill to make a cover of metal quickly, effectively and with the least waste is necessary. It also requires the skill to use some workers' tools.

*How special knowledge and skill are obtained.*—The worker is trained on the job. Previous experience in sheet metal necessary. The worker is under the direction of the the erecting room.

### **The Babbitt Metal Worker**

*What the worker does.*—In making babbitt metal the worker heats the metal in a small forge and pours it into the three bearing surfaces of the silage cutter. The metal is kept in place by a wall of specially prepared thoroughly hardened.

*Special knowledge required.*—The worker needs to know how to prepare the metal and the consistency at which to keep it.

*Special skill required.*—The skill necessary to pour the metal so that a perfect bearing surface is made and to pack properly the part to be babbitted preparatory to pouring is required.

*How special knowledge and skill are obtained.*—Special knowledge and skill are acquired on the job through instruction from the foreman. A very short period of time is required.

### **The Tinner**

*What the worker does.*—Separators and silage cutters are usually metal lined. A number of parts, such as delivery pipes, stacks, shoots and shoot rests, are made of galvanized iron. The work is done by a contract tinsmith and his assistant. In the forming of sheet metal pipe, various machine processes are used. The galvanized metal is first put into a roller and rolled, after which it goes to a lapper which turns the ends one over another, holding them together in a loose fold. Following this the pipe is seamed. Some of the pipe is purchased in cut lengths. The pipe is usually covered with malleable iron rings which the tinner bolts on.

Another form of pipe made is the flexible elbow. This is made in short sections resembling truncated cones with each section collapsing into the one below it. Hoods also are made in short square and rectangular sections jointed together. In making these parts the tinner lays out the work "in the flat" and then "makes it up" in the manner described.

*Special knowledge required.*—The worker needs to know the use of ordinary tinsmithing machines, such as the shearing machine, rolling and lapping machines, hand shears, and soldering irons. He needs a rudimentary knowledge of plane and solid geometry and the rules of mensuration in order to lay out his work accurately and with the most economical use of materials. The rudiments of mechanical drawing are also necessary.

*Special skill required.*—The skill necessary to make pipe, distributors, elbows and hoods in an accurate, economical and rapid manner is essential.

*How special knowledge and skill are obtained.*—The contractor obtains this knowledge and skill by working at the trade. The

helper works under the instruction of the contractor. Applications may be obtained on the job, but the worker learns the proper methods of lay out without a serious study of the applied principles of plane and solid geometry, mensuration, and projection.

### **The Foreman of Erectors and Testers**

*What the ensilage erector foreman does.*—The ensilage foreman has charge of the assembling and testing of silage machines. He gives out the work according to typewritten orders received from the office. He also erects some machines and keeps a list of the entire weekly production. He instructs and advises men in his department in their respective occupations. At times he lays out work on ensilage stacks.

*What the thresher erector foreman does.*—The foreman has charge of the assembling work of separators and threshers. He lays out the work for each erector. On new patterns he makes the first model, working from blue prints. He directly supervises the work of the erectors who take the lumber cut to size in the cutting room and assemble it. He also supervises the work of two or three metal workers who make linings for the drum separator. The foreman also does part of the actual assembling.

*What the thresher testing foreman does.*—After the thresher is erected, a line of belting is attached in order to try it out with power to see if the belts and shafting are in proper alignment. He also checks whether the bearings show a tendency to heat and whether the working parts of the machine are operating properly. This is done by the foreman and his assistants, who also fit the line shafting preparatory to the test.

*Special knowledge required of all foremen.*—All foremen have a thorough working knowledge of each part of the machine, including how it is manufactured, what function it is expected to perform, and how to adjust various parts in order to attain the machine's maximum efficiency. He also needs a knowledge of the tools and machines used by all workmen in their respective departments.

*Special skill required of all foremen.*—The foremen must possess all the technical skill of all erectors, and in addition to this the ability to direct and manage the men under them.

*How special knowledge and skill of all foremen are obtained.*—Many foremen have attained the basis of required knowledge and skill in operating agricultural machinery on farms, and in assembling implements in agricultural establishments. Some foremen have been drawn from cabinet shops, automobile and furniture factories. Technical skill may be obtained in the manners mentioned, but the necessary technical knowledge about the theory of mechanics can only be obtained by technical school education.

### **The Erector, Assembler and Tester**

*What the ensilage erector does.*—The new worker is usually assigned to bolting the angle irons to the skids, attaching the legs and putting the drum on the frame. Other workers perform bench and assembly work on the metal parts such as chipping, filing, putting in key seats and vise work. In this work a wide variety of hand tools are used, including braces, bits, cold chisels, files, drifts, gauges and scrapers. A major part of the work is filing and scraping the parts until they fit perfectly and then assembling them in their proper places on the cutter.

*What the thresher erector does.*—The erector has usually been a carpenter who shows sufficient ability to build the body of a thresher. The lumber with which the body of the thresher is built has been previously cut to size and shape in the cutting room and is installed in well arranged bins in the erecting room. The worker, under the direction of the foreman, does all the erecting, not only building the frame of the separator but installing the various metal parts such as the drum, concaves and other parts which have been received from the blacksmith shop and the machine room.

Some of the woodworking operations are peculiar to the making of a separator. The erector must learn to arch decks and cut away a proper space for the installing of a drum. Part of the work, such as bracing the frame with steel trusses and bolting and rodding it together, nailing panels to girts and posts, and laying sills, is ordinary carpenter's work.

*What the ensilage tester does.*—After the cutter has been set up the tester belts it to an electric motor and tests it for alignment, balance and running quality. The machine is run at varying speeds, both forward and reverse, as long as the tester considers necessary to enable him to discover any flaws in the running parts.

If flaws are discovered, the machine is sent back to be adjusted, not, he attaches a card initialed with his O. K. indicating cutter is ready to be sent out.

*Special knowledge required of erectors and testers.*—All erectors and testers must be able to recognize all of the various parts of the machine and must know how to assemble each piece in its place and position.

*Special skill required of erectors and testers.*—All erectors and testers must have the ability to use wood, hand and machine tools. These include the carpenter's tools such as hand saws, braces and hammers, and metal work tools such as files, shears, hammers and cold chisels.

*How special knowledge and skill of all erectors and testers are obtained.*—According to the present standards and requirements of the industry, all necessary knowledge and skill may be obtained while working on the job.

### **The Foreman of Painters**

*What the worker does.*—The foreman directs the work of the painters and does stenciling, striping and transferring of pictures.

*Special knowledge required.*—A knowledge of the painter's trade; how to mix paints, oils and varnish, the consistency at which they should be used; the different kinds and uses of fillers, oil and varnish, and the preservative qualities of varnish is necessary.

*Special skill required.*—The skill necessary to do artistic painting, to place transfers evenly spaced and in the most effective positions, and the ability to direct a small force of workers on rough and finished painting operations is required.

*How special knowledge and skill are obtained.*—Special knowledge and skill are generally obtained during the painter's apprenticeship.

### **The Painter**

*What the worker does.*—Two kinds of painting operations are done on the frames of separators and balers; dipping and brushing work. The lumber, after being cut to size, is dipped in mechanically stirred paint to give it the filler coats. The worker on

job usually spends about half a day at this work and the remainder of the day in brush work. Following the erecting operation the finished separator or baler comes to the painting department to be painted and varnished. These are ordinary brush work operations done with a broad thick brush.

*Special knowledge required.*—It is essential that the painter have a knowledge of color values and some knowledge of color harmony. A knowledge of how to thin paints and a knowledge of fillers, paints, oils, varnishes and when to use them is necessary. An understanding of the hygiene of the occupation would be very beneficial.

*Special skill required.*—The same grade of skill required by the ordinary painter in putting on body coats is sufficient. A manipulative skill which enables the painter to lay on paint evenly and quickly is required. In varnishing the work must be done so that the brush marks will not show, which necessitates a broad, smooth, quick stroke. The dipper needs little skill except to see that the board which he holds in the paint vat becomes entirely covered with priming.

*How special knowledge and skill are obtained.*—Usually the special knowledge and skill are obtained by previous experience in some form of painting. This work does not require a highly skilled type of painter as all work is done under the supervision and direction of the foreman of the department.

### SURVEY COMMITTEE RECOMMENDATIONS

The agricultural implement industries of Richmond give employment to skilled moulders and foundry workers, machinists, blacksmiths, tool makers and pattern makers. Deductions about training for these trades are recorded in the conclusion of Chapter VIII, "Railroad Repairing," etc.

The trades which are peculiar to this industry, including erectors, sheet metal liners, dippers and painters, require no special vocational education for entrance or proficiency according to present standards and requirements. The Richmond Evening School can best discharge its function for workers in these occupations by encouraging them to enroll in the general evening courses, and in the trade extension courses in blue print reading, and metal and wood power machine operating.





## CHAPTER VIII

---

### INDUSTRIAL EMPLOYMENT: RAILROAD REPAIRING, MACHINE TOOL MANUFACTURING AND OTHER METAL INDUSTRIES

In this chapter are grouped the occupational descriptions of all the metal trades of Richmond common to many lines of manufacturing but not peculiar to particular industries, together with metal trades which are followed in distinctively metal industries. Thus, the description of the work of all machinists, whether practiced in an agricultural implement, wire fence or auto factory, is included in this chapter rather than in those describing the respective industries mentioned. Also, the description of all trades practiced in the manufacture of multiple drills are here recorded, as all the occupations in this industry are essentially of the metal trades group.

#### **Railroad Repair Shops**

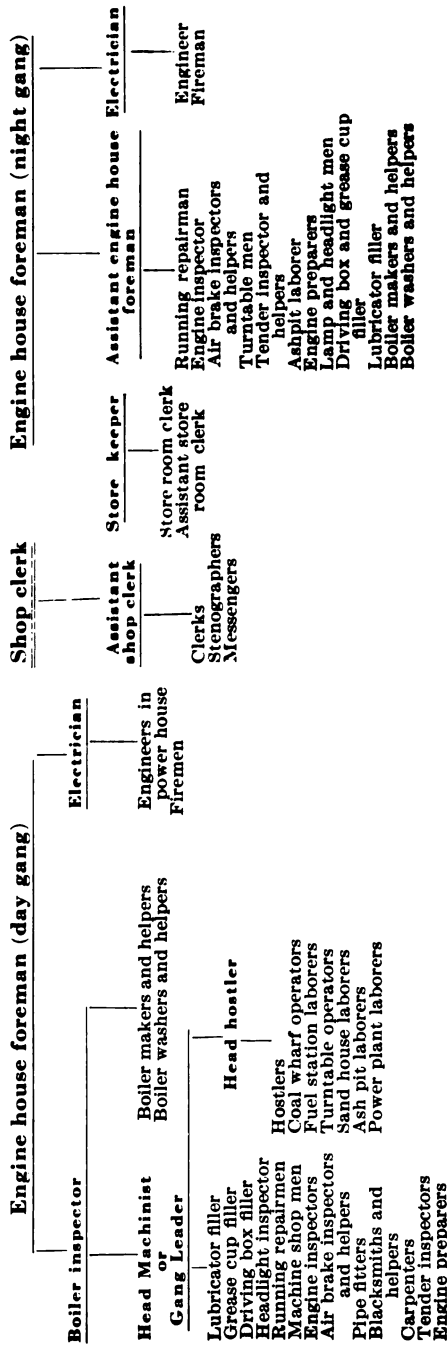
*Scope of work done.*—Being a division point of the Pennsylvania Lines, Richmond is a repair center for making general repairs on engines and freight cars, and occasionally on passenger coaches. The work includes overhauling, supplying and inspecting engines, freight cars and coaches.

There are two repair shops: The "old shop" where engines are repaired, supplied and inspected; and the "east yard shop" where cars of the company, and foreign roads, are repaired and rebuilt.

*Shop organization.*—In both shops work is carried on day and night. In the old shop two twelve-hour shifts are run, while at the east yard each shift works ten hours. In both shops a seven-day week is observed.

The outline which follows shows in detail the occupations of the old shop classified in the descending order of importance. The occupations in bold face type are the more important ones and are largely directive in their nature:

**Master Mechanic**



*Routine in engine repairing.*—The engine is delivered to the coal dock. The hostler supplies water and coal, drives it to ash pit, and knocks the fire out. The ash pit man cleans the ash pan, and the hostler finds out which way to turn the engine. It is then run in the roundhouse and the engine inspector thoroughly inspects the engine and mechanical parts. As the same time the boiler inspector thoroughly inspects the boiler and flues and caulks all leaks. The engine is now fired and the engine inspector makes out his report of the work to be done on the mechanical parts of the engine. The gang leader next distributes the work among the men under his authority, and sees that the proper repairs are made. The engine is finally offered to the transportation department as ready for service.

It is the policy of the shop, whenever possible, to make running repairs without shopping the engines. At all times there is kept on hand between \$40,000 and \$50,000 worth of stock material for repair work. Repair work is done primarily by machinists' helpers.

*Routine in car repairing.*—The initiatory inspector determines the repairs which must be made. The inspector then "checks off" the work on what is called a job card. This card is placed in the office and the workmen choose whatever piece of work they care to do. They draw the material for making repairs and do the work indicated, after which they return the sheet. The finished piece-work inspector checks the work to see that it has been done in accordance with directions. His O. K. means that the car is now ready for service. Most of the work is on a piece basis but, in case of a wreck-job, car repairmen composing the wrecking crew, receive time and a quarter.

One branch of the work is repairing cars for foreign roads. There is a general agreement between the roads that foreign cars are to be repaired wherever the damage occurs and the bill for the work sent to the company which owns the car.

### **Machine Tool Manufacturing**

*Products and scope of work.*—The products of machine tool manufacturing in Richmond are high speed multiple drills. Steel is received in bars and sawed and machined into parts. The castings are made in outside plants according to patterns furnished by the company. Cast and machined parts are assembled into units, after which units are assembled into complete multiple



A Universally Adjustable Multiple Drill with Twelve One and  
inch Spindles.

drills. The radial drill has the following units in its construction: Heads, speed boxes, feed boxes, tapping attachments, tables, feed plates, columns, bases, oil systems, universal joints and adjustable arms. The making of these units involves a considerable number of operations such as turning, grinding, tempering, boring and milling. About one-half of the working force is employed in machining, and operating automatic screw machines and turret lathes.

*Shop organization.*—This is one of the very few industries in Richmond in which there is any type of apprenticeship. Apprentices are employed in the machine shop, the tool room and the drafting room. In the machine shop the period of apprenticeship is four years. At the end of the first year apprentices are presented with a set of machine tools and a micrometer.

Due to the nature of the industry, and the product manufactured, a high type of mechanic is needed. This need cannot be met locally at the present in Richmond. The company now imports many machinists.

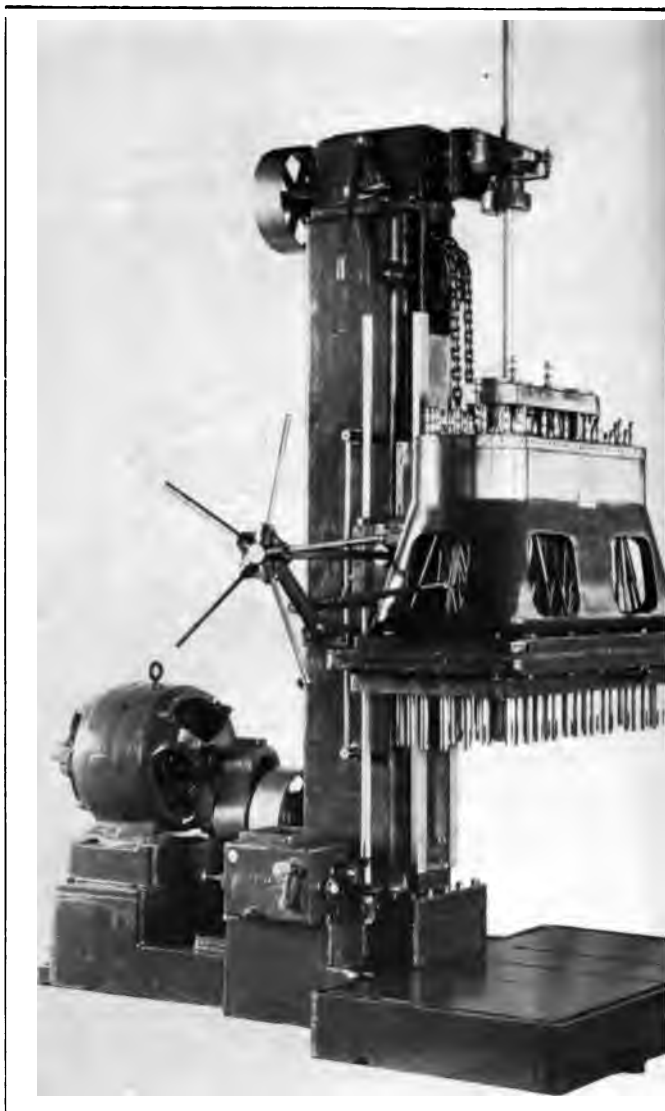
Machinists and operators must be able to read blue prints and use all types of measuring instruments in addition to operating all types of metal working machines.

The work is not seasonable. The working week for the day shift is fifty-eight and one-half hours, and for the night shift sixty-two and one-half hours.

### **Manufacturing Track Derailers**

*Products and scope of work.*—Track derailleurs are metal contrivances which deflect the wheels of a railroad car from the track. They consist of two parts, a block which receives and deflects the wheels and a guide box which holds the derailing block in place. The parts are cast in an outside shop and then machined. The work involves simple machine operations and a type of worker corresponding to the foundry laborer is employed.

*Shop organization.*—The industry gives employment to a draftsman, pattern maker, switch sign painter, and a considerable number of men, former foundry laborers, who do the very rough machine work. Physical strength is the prime requirement for workers in this industry. Promotion is infrequent. As the products may be stored, awaiting deliveries of future orders, the work is not seasonable. The majority of the workers receive from \$2 to \$2.25 per day.



A Universally Adjustable Multiple Drill with Direct Connection

### **Manufacturing Roller Skates**

*Products and scope of work.*—Various types of roller skates are made in Richmond. Although a roller skate is a comparatively simple piece of mechanism it consists of approximately 175 parts. Most of the parts used, including axles, screws, balls, dust caps, rivets and straps, are purchased made up. There are, however, from twelve to fifteen operations through which some of the larger parts are carried before going into a skate.

The principal operations are punching the foot plate, forming and tempering the foot plate and screwing and riddling the small parts. In addition, there are such operations as drilling, tapping, assembling trucks (the part of a skate to which the axles are attached), adjusting, forming springs and putting them in, making pins, cutting and threading axles, planing key ways, riveting straps and riveting metal parts. The rollers go through some three or four operations, including turning, varnishing, driving and clinching to the metal part which covers them. The wood wheel of a roller skate is covered with a heavy steel band or tire which is forced on or clinched under great pressure. This makes the wheel one solid body, the wood forming a complete support for the steel band.

*Shop organization.*—The few men employed in this industry perform all the various operations. One day the whole force may be engaged in assembling skate parts, or the next, the whole force may be employed turning the wood core for the skate wheels. Thus, men "handy with tools," rather than men skilled in various trades, are employed. The promotional range is very limited. The busy seasons are from August to November and from March to June. The plant is shut down for a short period of time during the summer.

### **Manufacturing Ventilating and Greenhouse Apparatus**

*Products and scope of work.*—Among the greenhouse fittings manufactured are brackets, joints, pipe carriers and hinges. Ventilating apparatus includes several kinds of patent metal sash. Heavy parts are cast in outside shops and then ground, drilled and turned when necessary. Parts are assembled, dipped or painted, and subsequently packed for shipment.



*Shop organization.*—Work in this industry requires ordinary health, strength and common school education. Work follows a set routine. Promotion is very unlikely. "Men" are the type required. The rush season is between May and June. During the year there is likely to be a month of overtime work.

### **Manufacturing Fire Escapes, Fire Doors and Safety Gates**

*Products and scope of work.*—Fire escapes and doors are made according to builders' specifications. In making fire escapes the principal operations are cutting strip metal to size, shaping, assembling, bolting and riveting; while in the making of safety gates and fire doors the principal operations are fitting sheet metal over wooden doors and attaching hinges. Sheet metal workers, tin smiths, carpenters and blacksmiths are required.

*Shop organization.*—One worker in each department is required to read architects' building blue prints. This worker is one of the other men, whose skills are of the operative and assembly type. Promotion is uncommon. The industry follows the general trading pattern in terms of seasonableness. The fall season lasts from September to Christmas and the spring season from March to July. Old employees are retained throughout the year.

### **Automobile Repairing and Truck Manufacturing**

*Products and scope of work.*—All Richmond garages repair and make adjustments on automobiles. Such repairs may include the making of all mechanical adjustments, grinding valves, cleaning the carbon out of cylinders, boring cylinders, making pistons for motors, turning cups and cones for ball bearings, and making parts within the capacity of the following machines: lathe, mill machine, key seater, drill press, lathe and hack saw, and by electric power.

In the manufacture of automobile trucks, as carried on in this establishment, the castings are purchased outside. The rough work on the rough castings of the engine, transmission, front and rear frame, is done in the establishment. Other parts are purchased from other companies and assembled.

*Shop organization.*—In the automobile machine shop all

men are required to do all types of repair work. Owing to the nature of the work, hours are likely to be very irregular. The rate for over-time and night work is higher than for day work.

### **General Machine Jobbing**

*Products and scope of work.*—Jobbing machine shops, of which there are several in Richmond, take work of widely varying kinds. Small parts for printing presses, elevators, steam and gas engines are made; machines are torn down, parts replaced and adjusted; metal patterns are made and finished; metal store fronts, metal cases and fire escapes are made and installed; in fact, almost any kind of a job requiring the services of well trained machinists may be taken.

*Shop organization.*—Any machinists in the employ of any jobbing machine shop may be required to operate any machine, use any metal working hand tool, any gauge or measuring instrument, and read all types of blue prints. Highly skilled, "all around" machinists and metal workers are employed. The constant variety of work and new problems serve as a mental stimulus to workers and tends to prevent the losing of interest in work, so common among workers in industry. Employment is constant the year around. The small job shop, however, is usually located in a small converted building with all the usual inadequacies of light, heat and ventilation.

### **General Foundrying**

*Products and scope of work.*—There are several shops in Richmond producing exclusively brass and iron foundry products, and several large manufacturing establishments which operate their own foundries, and also take jobbing and general foundry contracts for other shops and factories. Among foundry products are parts of agricultural implements, lawn mowers, automobiles, farm wagons, pianos, roller skates, all of which are cast from iron; and trolley wheels, pens, harps, motor axle bushings, journal bearings, trolley cars, connector arms, connectors and piano pedals, all of which are cast from brass and bronze.

*Shop organization.*—Foundry work includes the occupations of iron moulder, brass moulder, core maker, moulder's helper, and cupola tender and assistant, aside from the foreman. Finishing



A Modern Foundry Building with Adequate Provision for

occupations are shaking out, tumbling, grinding, filing brass and alloys, often plating and polishing. The responsible for all phases of moulding and casting. The moulding work in Richmond is on a piece basis. The moulders' apprentices in Richmond at present, and they gradually being taken over by foreigners, the majority do not possess the all around skills of the moulders of 1910. Specialization and use of machines permit the type of labor to perform the routine work more or less torily. Each moulder has a helper. The work is throughout the year.

Founding is a fundamental phase of industry, but in Richmond it is to be regarded as one branch of the agricultural implement industry rather than as an independent one. In foundries in agricultural implement plants do job work few independent foundries in the city.

No large work, such as loam work, is carried on, the parts cast being small in size and are made by bench moulders. Brass moulding is done in two establishments

of the process of manufacturing other products. Following the general custom these establishments also do job work.

Into a cupola or furnace is dumped the mixture of pig iron, scrap iron, slag and limestone over a layer of coke. Following this same order the cupola is filled almost to the top with layers of coke, iron and sandstone. Fire is applied from below and the mass heated until it becomes molten. Shortly before the charge is drawn an air blast is applied to hasten combustion.

When the charge shall be drawn is determined by the cupola tender who looks into a peep hole in the base of the cupola and determines by the consistency of the mass, and also by drawing off a ladleful of metal, the proper time for drawing it.

Previous to pouring, the moulders and core makers have made moulds and cores. The moulders work with metal or wood patterns furnished them by the pattern makers.

The moulders and helpers gather round the cupola with iron ladles just before pouring off. As the metal issues from the cupola spout they fill their ladles and carry them quickly to the moulds which are arranged in long rows on the floors. Each mould in turn is filled with metal and then left to cool. A gang of cleaners, some hours later, break the moulds and take out the castings. The rough edges and "gates" are then ground or filed off and the casting cleaned or tumbled preparatory to being machined.

### **Manufacturing Automobile Fenders and Gasoline Tanks**

*Products and scope of work.*—The presence of the automobile industry in Richmond, has occasioned the local manufacturing of fenders, hoods and gasoline tanks. The industry is in the interesting transition period from the craft to the factory basis. The proprietor is a skilled sheet metal worker, and so were all his first employees, but with the standardization of fenders, hoods and tanks, it became possible to substitute for the general sheet metal worker who was skilled in all phases of his work, the operator whose work is confined to one or two special machines and tasks.

*Shop organization.*—The proprietor is general manager. In the construction of fenders, a model is first made by hand, and if satisfactory in design and construction, adopted as a pattern. Sheet metal of standard size and gauge is required. The marker traces the pattern on a single sheet, after which the cutter feeds the sheet in a shearing machine, cutting the stock to pattern size.



The next operation is wire binding. The operator of the wiring machine places the sheet metal between the two wheels, one above the other, and as the metal plate is fed through, it is bent over on one and under on the other, resulting in the enclosure of the wire. Next is the forming operation by which the metal is given the fender shape. It is then smoothed, after which it is crowned. Brackets are then mounted and the assembling process completed. Spot welding is rapidly supplanting riveting. After being thoroughly cleaned, it is enameled and baked.

### Occupations and Number Employed

	Males
Machinists and helpers.....	185
Machine operators.....	256
Railroad master mechanic (not analyzed).....	1
Railroad gang leaders (not analyzed).....	5
Engine house foreman and assistants.....	3
Hostlers (not analyzed).....	5
Boiler makers and helpers.....	10
Car repairmen and helpers.....	87
Railroad shop laborers.....	66
Tool makers.....	60
Blacksmiths.....	66
Assemblers (see also Chapters IV, VI and VII).....	50
Sheet metal workers (see also Chapters VII and XI)...	62
Dippers and enamelers (not analyzed).....	10
Pattern makers.....	25
Foundry foremen.....	5
Moulders and helpers.....	136
Core makers.....	43
Cupola tenders.....	6
Cleaners, grinders and foundry laborers.....	101
Total.....	1,182

### Facts Common to All Workers

*Source and selection of workers.*—In all metal working departments of Richmond shops and factories where a foreman is in charge, he employs all workers, subject, however, to the approval of the manager or superintendent. In some foundries the con-

tract system is followed, and in these cases the contract and discharges at will. Moulders frequently employ helpers. There are no employment agencies or offices in connection with any of the Richmond manufacturing establishments.

*Mental and physical requirements.*—A type of natural ability equal to or above the average is required for success in pursuing these metal trades;—machinist, boiler maker, repairman, tool maker, sheet metal layer out, pattern maker, man moulder, and cupola tender boss. The worker with initiative and good health may become a successful operator, car repairman, blacksmith and moulder. In the press operating, according to present standards in the steam engine and other Richmond industries, practically any mentally deficient, can do the work. Laborers, blacksmiths and moulders must be very strong physically, capable of doing heavy lifting without strain and of enduring long hours of physical hard work.

*General education required.*—Laborers, core makers, assistant moulders' helpers, and drill press operators, actually need only enough general education to understand verbal orders, to compute time spent on jobs, and to figure the day's earnings. The rudimentary phases of reading, writing and arithmetic are entirely adequate. Thus, a sixth grade education is sufficient for the actual working requirement of these jobs.

Machinists, boiler makers, car repairmen, tool makers, blacksmiths, sheet metal workers, pattern makers, moulders and tenders actually need a broad enough general education to provide a foundation for trade mathematics, plan drawing and metallurgy, strength and composition of materials, and science related to welding, brazing and foundry work. A complete elementary education is necessary and a high school education is desirable. All prospective metal workers in these trades should complete the full Junior high school course as outlined in other sections of this report.

*Hazards and inherent character of work.*—Serious temporary and permanent injuries to workers in the metal trades may result from heavy lifting, undue exposure to extremes of temperature, inhaling gases and free metallic dusts, exposure to blinding light, burns from molten metal and injury from unguarded machinery.

Railroad machinists, machine operators, boiler makers,

repairmen and laborers are exposed to all extremes of temperature from the interior of the engine with a temperature of 100 degrees to the freezing temperature of winter. They are also liable to severe back strains from heavy lifting and to injury to the pulmonary tract from exposures to free metallic dust. Boiler makers often become partially and totally deaf. Blacksmiths and sheet metal workers may receive eye injuries from the oxy-acetylene welding process, unless they protect their eyes by wearing colored glasses or goggles. The feet and ankles of moulders, their helpers, and foundry laborers are often burned with molten metal in the pouring of the moulds. The wearing of Congress shoes is a protection to these workers. One company furnishes these shoes at cost to workers.

### **The Machinist and Helper**

Machinists and helpers are employed in railroad repair work, machine, tool and other manufacturing plants, small job shops, automobile repair shops and in upkeep and tool work in practically all plants in Richmond. The analysis which follows is organized on the basis of the particular employment.

*What the railroad machinist does.*—In the railroad repair shop such running repairs are made as are necessary to keep the locomotive in service perhaps for only a single run, or until it may be thoroughly overhauled. One machinist does practically all the machine work on lathes, drill presses, and shapers in the repair of bearings, crank pins, shafts and other engine parts. The helper makes the running and shop repairs after the parts are made, also the dissembling and assembling of parts. At odd times he may be permitted to do some of the easy machine work.

The engine parts most frequently repaired are pistons, connecting rods, bearings, throttles, injectors, and steam gauges. There is a tendency toward specialization in work, as one man is usually assigned to test and repair steam gauges, another to repair injectors, and another to remove broken parts. All receive their working orders from the gang leader or the assistant engine house foreman.

*What the machinist does in manufacturing.*—In the manufacturing of high speed multiple drills, the machinist works from a blue print from which he obtains all his measurements. He must be



able to set up his own job and to operate skilfully plane, large boring mills and radial drills. As all operations he must work with speed as well as with precision. The machinist must thoroughly understand the use of micrometer calipers, and be able to produce a finished part varying not more than six one-thousandths of an inch from the standard.

In manufacturing fire escapes, fire doors and track work a lesser degree of accuracy is entirely acceptable. The machinist works from blue prints, which are received from the office of architects and building contractors. In the small plant he chases the stock, lays out the patterns if necessary, and turns the metal to form a size, drills necessary holes, rivets, grinds and assembles. The raw material may be sheet iron, cold rolled steel, and steel bars and tubes. The work of such workers are "handy metal workers" many of whom are real machinists.

In the manufacturing of agricultural implements, the machinist operates lathes, engine lathes, Gisholt machines, boring machines, drill presses, punch presses, milling machines and shears. He builds separator cylinders, and other iron parts, and directly attends to all upkeep work.

The vise man chips and files parts, and cuts key ways and pulleys, and assembles the more intricate implements.

*What the job shop machinist does.*—The job shop machinist should be, and often is, the highest type of worker in his shop. He receives orders for repairs and parts on all types of machinery and mechanical devices. The week's work may involve the whole range of machines including lathes, drill presses, grinders and planers, and a large variety of hand tools which the machinist is supposed to have in his "kit" for use. The job shop machinist is often a model maker, constructing from metal whole machines and machine parts. He is, oftentimes, also a tool maker and pattern maker. He must be able to work from a blue print as from verbal directions. The nature of job shop work prohibits specialization.

*What the auto repairman and machinist does.*—The auto repairman must be a thorough all around mechanic. Upon the car brought in for repairs, he must locate the part

is broken or which needs adjustment. Then he must determine how to remove the broken part or make the adjustment with the least possible disturbance to the related mechanism. After doing this he makes the repair or the adjustment, being assisted by a helper. Small repairs and replacements requiring the use of the planer, milling machine, emery wheel, key seater, drill press, lathe, and hack saw are made in the shop. Soldering and brazing are also done, as well as necessary blacksmithing. Engines must be timed, cylinders scraped or bored, valves seated and ignition, starting and lighting systems repaired. Thus, the auto machinist and repairman must possess the knowledge and skill of the machinist, the blacksmith, and the electrician.

*What the upkeep machinist does.*—The upkeep machinist must be an ingenious worker, as he must repair all machine parts, make new parts to replace old ones, adjust machines, and set up the new machines which may be purchased. During the course of his work he must operate all machines in the plant, and, oftentimes, instruct others in their correct operation and control. All manufacturing plants in Richmond employ machinists for upkeep purposes. Sometimes these machinists are also tool makers.

*Special knowledge required.* The basic special knowledge required of all machinists, regardless of employment as above indicated, is uniform. They must be able to read blue prints with accuracy and facility, and must use instruments of precision. A knowledge of metallurgy, and tensile strength, elasticity and composition of metals, as well as elementary geometry and trigonometry is required. It is also necessary that the machinists know the best cutting speeds for all machines and metals, as well as how to set up and operate the various machines.

*Special skill required.*—The special skill required includes the use of instruments of precision, machine operating, using hand tools, and dismantling, assembling and adjusting machines and replacing broken parts. Machinists must be able to set up and operate milling machines, planes, shapers, drills, lathes, slotters, screw machines, tool grinders, and skilfully use all hand tools, particularly the hand file. Richmond machinists must be able to knock down, assemble and adjust all types of machines.

*How special knowledge and skill are obtained.*—In the railroad repair shop and machine tool manufacturing industry, beginners

are trained through a period of apprenticeship. The apprenticeship in the railroad shop is three years, while in machine tool manufacturing the period is four years. In either case, upon the completion of the first year of the apprenticeship, the worker receives a good set of tools and a machine. There are but few machinists' helpers in Richmond, and the amount learned or the proficiency which these helpers acquire depends almost entirely upon the helper himself. Many of the best machinists now in Richmond have been trained in the cities through an apprenticeship and day and evening school instruction.

A great number of machinists, however, have started as machine operators, changing employment when necessary to the use of another machine. In this way the trade has been partially learned. The trade now partly develops in work on technical skills of machine operating but does not and cannot include information about metals, science, drawing and mathematics in the trade.

*Promotion.*--In the railroad shop and manufacturing shop the machinist may be promoted to foreman. Helpers and apprentices may become machinists. Good general machinists with a little capital may open job shops, and auto machinists may open auto repair shops.

*Wages.*---The scale of wages varies from twenty-seven to thirty-six and one-half cents per hour for a ten-hour day.

### The Machine Operator

In Richmond, milling machines, planers, slotters and shapers of these types are operated by machinists rather than machine operators; therefore, these types of operators are not here included.

*What the railroad machine operator does.*--In the railroad repair shop machine operating includes the wheel boring machine, the wheel press, the lathe, the power threading machine and the drill press. Machine operating is specialized to the extent that one worker turns the axles to size, another drills the wheels, and another operates the hydraulic press by means of which the wheel is forced on the axle. The pressure applied is graphed automatically on a sheet of paper placed on a revolving cylinder.

means of this graph, the worker determines whether or not the wheel and axle have been drilled and turned to the proper size. A helper rolls the complete unit of axle and wheels on a track into the yard, where it is kept in stock for future use.

*What the drill press operator does.*—The drill press operator drills holes in parts of lawn mowers, agricultural implements, automobiles, high speed drills, etc., by means of single spindle, radial or gang drills. In a single spindle drill, a single drill is mounted in the head in a fixed position; in a gang drill a series of spindles are mounted in the heads; and in the radial drills, a single spindle may be moved along a guide permitting complete adaptation to the work at hand. The stock to be drilled is placed on the table, usually beneath a template jig or guide to insure accuracy, and by means of hand or foot control the drill or drills are fed against the stock, sufficient pressure being applied to complete the drilling process. The drill press worker may at times do hand chipping with a cold chisel on rough castings.

*What the screw operator does.*—The automatic screw machines perform the same type of work as the turret lathe. Sometimes the operator sets up his own machine and this "setting up" process requires skill. Six bars of stock are fed into the six units of the machine, the six different operations are performed simultaneously. The operator watches the machine, doing nothing at all unless an adjustment is needed. By continual and careful observation, he learns to set up the machine.

*What the lathe operator does.*—The operator puts the parts to be machined in a chuck fixed to a madrel, while the tool held in the tool post is advanced or receded by means of a feed regulated by the operator. The part being machined revolves about the cutting tool.

*Special knowledge required of all operators.*—The special knowledge required for operating the above named machines consists of knowing how to mount the work in the machine, how to select and insert the proper tool and how to regulate the cutting speed of the machine. As jigs and templates are furnished to guide the tool and indicate where cuts are to be made, little knowledge is needed of blue print reading and use of instruments.

*Special skill required of all operators.*—Skill consists in quickly

and accurately mounting the work in the machine, mounting tool, regulating machine speeds and removing the finished

*How special knowledge and skill are obtained.*—The skill necessary for operating the drill press may be obtained on the two weeks time, following the instruction of the foreman; learn to operate the other machines requires a longer time; all necessary skill may be obtained on the job.

*Promotion.*—Machine operators who take advantage of school instruction for machinists may obtain work requiring operation of a number of machines and thus ultimately become machinists. Without learning to operate machines other than those which constitute the specialized work of the day, and without learning the use of hand tools, the chances for promotion are very slight.

*Wages.*—Weekly wages range from twelve and one-half to twenty cents per hour for a ten hour day.

### **The Engine House Foreman and Assistant**

*What the foreman does.* The engine house foreman looks after all engines, indicating the repairs which are necessary. He decides when an engine shall be "shopped" for repairs, using all possible means of obtaining the maximum mileage from each engine between shoppage. The foreman supervises the work of the repairmen on engine work.

*What the assistant foreman does.* The assistant foreman checks up the work of the repair hands, seeing that the work is of the standard required for the engine to pass inspection.

### **The Boiler Maker and Helper**

*What the worker does.*—The engine repair boiler maker removes and applies patches to defective boilers. He must remove and replace stay bolts, remove and replace flues and calk; remove and replace front end netting and do all these repairs well enough to withstand all probable strains of road work.

The boiler makers' helper does the rough work of drilling and cutting the stay bolts with a cold chisel. He also assists in removing and replacing and calking flues, and in repairing

in ash pans and front ends. In calking flues he fires up the boiler to 100 pounds pressure and knocks out the fire and cleans the fire box. Calking is done under the 100 pounds steam pressure.

*Special knowledge required.*—The boiler maker must be able to detect damaged boilers and know how to make the proper repairs. He must know how to use the tools of his trade, how to read steam gauges, properly use calking material and know when a repair job will pass inspection. The helper must know how to fire the engine, read the steam gauge, knock out the fire and calk flues.

*Special skill required.*—The boiler maker and his assistant must know how to use hammers, chisels, punches, drills and other tools of the trade; be able to lay out the patch of the proper size and shape and apply it. He must skilfully use calking tools.

*How special knowledge and skill are obtained.*—The majority of the boiler makers learned the trade in an agricultural implement factory. New workers are trained by means of the helper system. By working on the job, under the direction of the foreman, the necessary knowledge and skill are now obtained.

*Promotion.*—The boiler maker may be promoted to boiler inspector and the helper to boiler maker.

*Wages.*—The boiler maker receives from thirty to thirty-six cents per hour for a ten-hour day or a twelve-hour night; a helper receives from eighteen to twenty-six cents per hour for a twelve-hour day or night.

### **The Car Repairman and Helper**

*What the worker does.*—In the car repair shop freight cars requiring immediate attention are repaired, and in some cases, passenger cars are repaired. With a foreign car needing repairs, work to the extent of \$25.00 may be done without the specific authorization of the company owning the car; if the cost will exceed this figure, permission must be granted to either tear down or repair the car. At present the law requires a new safety device consisting of grab rods and metal ladders to be installed on all cars according to certain specifications within a certain specified time. For this work \$50.00 is allowed. In case a car to be repaired does not have a safety device, the repairs may cost \$75.00.

The head carpenter lays out the material to be used for prints, templates and removed parts. His helpers do the planing, boring, and mortising after the work has been laid out. The carpenter makes sills, end sills and parts for seats, trucks and truck repairs. The materials handled vary in size from the smallest moldings to sills of 6" x 8" end dimensions.

The freight car repairmen, who constitute the bulk of the force, repair and remodel freight cars, and, in the case of wrecking, serve as the wrecking crew. They make all types of repairs, such as replacing a broken bolt to an entire body. Air brake and heating and ventilating systems, floors, walls, grab rods, and other parts within the range of their work.

*Special knowledge required.*—The head carpenter must have a thorough knowledge of car construction, repairing materials, their selection and strength, and blue print reading. Repairmen must also have a thorough knowledge of the mechanical parts, running parts and the body of freight and passenger cars.

*Special skill required.*—General all around manipulative skill is required, such as possessed by well trained carpenters. Carpenters' helpers must be able to operate and care for power working machinery. Repairmen, in addition to having the skill of carpenters, must also be able to do pipe-fitting and other metal work.

*How special knowledge and skill are obtained.*—The skill necessary for the manipulative phases of repair work may be obtained on the job by working as a helper under the foreman's direction. Blue print reading and information about lay out, materials, and pipe fitting cannot be obtained on the job, but through correspondence or evening school study.

### The Railroad Shop Laborer

*What the worker does.*—The railroad shop laborer does the heavy chore work, including cleaning, shoveling cinders, wheels, and rubbish. He also assists in loading and unloading, in making heavy repair parts, and occasionally in helping car repairmen serving on the wreck crew.

*Special knowledge required.*—The laborer must be familiar with the

**the** yards and shops so that he can perform his work with a minimum of direction and supervision from the foreman and gang leader.

*Special skill required.*—Skill is limited entirely to the proper use of brooms, shovels and other simple tools.

*How special knowledge and skill are obtained.*—Necessary knowledge and skill may be obtained by working on the job under the direction of the foreman.

*Promotion.*—The work of the laborer leads to no other work of a higher order.

*Wages.*—The rate of pay for laborers is seventeen cents per hour for either a ten or twelve-hour day.

### The Tool Maker

*What the worker does.*—The tool maker, or sometimes termed the tool room machinist, makes repairs on the machines of the plant, repairs, makes and tempers tools, and makes templates, jigs and other devices used in various manufacturing processes. All Richmond manufacturing plants of any importance employ at least one tool maker. When not engaged in repair work, the tool maker may work on new models of machines and mechanical devices, or supplement the regular machinists. The special tools ordinarily kept in the tool room, are usually in his direct custody. He issues them to workmen upon check, sees they are returned, and if necessary grinds and tempers them so that at all times all small tools are ready for service.

The tool maker works from a drawing or blue print, or duplicates a part furnished him, or works from verbal directions. He operates all types of metal working machines, handles skilfully all metal hand tools, including chisels, files and reamers, and uses all types of instruments or precision. He must be able to do everything expected of a well trained machinist, in addition to meeting all kinds of situations requiring ingenuity and inventiveness.

*Special knowledge required.*—The tool maker must possess special knowledge concerning metals, the kinds, qualities and working speeds of each; tempering of steel; the mechanics of machine



work; operation and upkeep of all metal working machines; use of hand tools; and blue print reading.

*Special skill required.*—The tool maker is the highest worker in the shop. He must be skilful in using all the hand and hand tools enumerated under the description of the machine operator; skilful in tempering; inventive in mind and unusually resourceful.

*How special knowledge and skill are obtained.*—There is to four-year apprenticeship in tool making still operative in Richmond shops. The majority of tool makers now employed in Richmond learned their trade through apprenticeship. During the apprenticeship period, however, no provision is made for teaching the science, mathematics and drawing of the trade. The school must provide courses in metallurgy, shop mathematics, geometry and trigonometry, and blue print reading.

*Promotion.*—As this is the highest position in the shop except those directive in nature, there are no opportunities for promotion for the skilled tool maker save in becoming foreman. Apprentices and helpers may become tool makers.

*Wages.*—Wages range from thirty-two to forty cents per hour for a ten-hour day.

### The Blacksmith

*What the worker does.*—Blacksmiths are employed in the road repair shops, in the manufacturing of agricultural implements and in small job shops where horseshoeing, wagon carriage repairing and general blacksmithing are carried on under the same roof.

The work of the railroad shop blacksmith includes the repair of grab irons, brake rods and other car parts, and repairing of metal parts. Forging, brazing and welding are essential operations. The recent installation of the oxy-acetylene welding requires the blacksmith to become proficient in this type of welding. The worker uses all the tools of the trade including anvil and power blown forges, hand and power hammers, slotters, chisels, and tongs. In repair work all kinds and sizes of bar, sheet metal and strap iron are used. He is also required to dress and temper tools.

In the manufacturing of agricultural implements the work

the blacksmith includes tool tempering, forging, welding, forming, thread cutting and shearing. Some assembling operations are performed by blacksmiths. During the rush season, work is limited to manufacturing parts for new implements, but during the summer months repair jobs constitute the bulk of the work. Repairing work includes dismantling implements and replacing or repairing worn and broken parts.

The job shop blacksmiths, employed in the fifteen Richmond shops, do all sorts of repair work on wagons, carriages and implements, build and repair fire escapes and fire doors, and do horse-shoeing.

*Special knowledge required.*—Regardless of the type of employment blacksmiths must understand the care of the forge and how to “fire up,” how to temper and dress tools, how to weld and braze, by both the old and new processes, and how to cut, shear, punch, drill and bend hot and cold metal. Tool tempering and iron and steel welding require scientific knowledge; the former, the recognition of types of steels and tempering methods, and the latter the knowledge of proper heats and fluxes. The job shop blacksmith must also know the anatomy of the horse’s hoof, types of shoes, how to fit shoes and how to nail shoes to the hoof.

*Special skill required.*—Skills consist in properly firing the forge, heating and shaping the metal, welding and tempering, and using all the tools of the trade.

*How special knowledge and skill are obtained.*—In the railroad shop there is a three years’ blacksmith apprenticeship. In other shops beginners start as helpers and by experience and observation develop the manual skills of the trade. Knowledge of metals, tempering, welding and welding fluxes can be acquired through school courses in metallurgy.

*Promotion.*—The blacksmith’s helper or apprentice may become a blacksmith.

*Wages.*—Wages vary from twenty-five to thirty-six cents per hour for a ten-hour day.

### The Assembler

See also Chapter IV on "Automobile," Chapter VI on "Lawn Mower" and Chapter VII on "Agricultural Implement Manufacturing."

*What the worker does.*—The work of the assembler in the manufacturing of agricultural implements, automobile lawn mowers is described under the respective chapters with these industries.

In the manufacture of greenhouse apparatus, the assembler dips in paint and gathers together parts of ventilators, hangers, chains, hinges, brackets, rivets, bolts and screws. In some cases he threads pipe, drills, punches and grinds parts. Operations similar in type to those enumerated are performed in assembling fire escapes, fire doors and railers.

In erecting high speed radial drills, the floor worker assembles the various machine units. He assembles the shaft, spindle and universal joint as a unit, to which he attaches the arm and bearings. A test is then made to see if the universal joint operates properly. In head assembling the shaft and drive gears are fitted to the spindle and spindle. The shifter fork unit is also attached.

*Special knowledge required.*—The assembler must be familiar with the completed product, and the exact relation of the parts and the function of each. He must be able to fit and rivet parts together and make all necessary adjustments.

*Special skill required.*—Special skill includes the use of tools and quick and accurate assembly of parts.

*How special knowledge and skill are obtained.*—The knowledge and skill may be obtained by working on the job under the foreman's direction.

*Promotion.*—There is no well defined system of promotion for the assembler. As a rule, this work leads to no other advanced job.

*Wages.*—The wage rate varies from sixteen to twenty cents per hour for a ten-hour day.

### The Sheet Metal Worker

See also Chapter XI on "Building Construction" and Chapter VII on "Agricultural Implement Manufacturing."

*What the worker does.*—Aside from the work in the building trades and the agricultural implement industry, sheet metal workers are employed in the manufacturing of automobile fenders, tanks, hoods and radiators and in covering fire proof doors and safety gates.

In making safety gates, the worker cuts the corrugated iron according to the blue print, and rivets it to heavy frames of angle iron. This work is very simple compared with manufacturing automobile fenders. In covering fire proof doors, sheet tin is tacked to tongued and grooved frames with a wrought iron nail; necessary soldering is then done.

Workmen with a higher type of skill are required in manufacturing radiators, fenders and tanks. As there is a marked tendency toward specialization in this work, specialized phrases will be separately described.

The layer out makes the pattern from which all parts are cut. His work is, therefore, of the utmost importance. He receives and works from a model or drawing, and from this he lays out the pattern in the flat, indicating the exact number to be cut and the gauge of the metal to be used.

The shearer operator or cutter cuts stock along the lines marked by the layer out by using the shearing machine or the hand shears.

The wire operator places the automobile fender, for example, between two wheels of a machine which are set one directly above the other. As the metal passes between the wheels one end is bent under, the other over, each bend enclosing itself around a wire running lengthwise of the fold.

Other sheet metal workers operate crowners, benders, welding machines, and do soldering, brazing and riveting.

*Special knowledge required.*—Sheet metal workers should possess a workable knowledge of drafting and pattern cutting; composition, weight and use of galvanized iron, steel, zinc, copper and brass; knowledge of the machines and tools of the trade and of soldering, welding and brazing of metals.

*How special knowledge and skill are obtained.*—There is no

form of apprenticeship in Richmond in the sheet metal Helpers, through the shop routine and instructions from men, may learn the use of machines and tools. Drafting out, however, require a background of mechanical and design which cannot be acquired in the shop.

*Promotion.*—Helpers may be promoted to machine men to sheet metal workers, and sheet metal workers out and foremen.

### **The Pattern Maker**

*What the worker does.*—The pattern maker is employed in special pattern making concerns and agricultural implement factories, the latter doing in part a job and contract pattern foundry business. The pattern maker makes patterns in aluminum, brass, and white metal of lawn mower and roller parts, track derailleurs, gasoline engines, agricultural implements, pneumatic tools, air hoists, air blasts, radial drills and piano

As the Richmond, Virginia, Survey reports in detail on 1914 to 1918, the work of both the wood and metal pattern maker, which descriptions fit the Richmond, Indiana, situation, reader is referred to this source for the occupational description.

*How special knowledge and skill are obtained.*—There is no actual apprenticeship in pattern making in Richmond. The majority of men now practicing their trade here, however, are products of apprenticeship instruction. There are a few who may, in time, become skilled pattern makers. There are no provisions, however, in the Richmond shops for teaching essential drafting and mathematics.

### **The Moulder and Helper**

*What the iron moulder does.*—A moulder is usually employed exclusively for either iron or brass moulding. The iron moulder in turn, may be either a floor or bench moulder. As the survey indicates, a floor moulder works on the floor or ground; a bench moulder on the bench. Piano plates and large agricultural implements are moulded on the floor, while small plates, wheels and cutting bars of lawn mowers and derailleurs are moulded on the bench. Each floor moulder is allowed

helper, while the bench moulder works alone. A good moulder assisted by a helper will mould from eight to ten piano plates each day. The plate weighs over 100 pounds. The flask used is metal and lifted by compressed air.

In bench moulding the worker places the wood or metal pattern in a snap flask, rams sand down upon it, smooths it off, places a board over it, and by means of the hand operated squeezer equalizes the pressure of the sand upon the pattern. This first half of the flask called the cope, is now inverted, the follow board removed and a thin layer of parting sand sprinkled over the moulding sand surrounding the pattern. The gate is then cut and the riser pin inserted. The other half of the flask, called the drag, is attached and moulding sand evenly packed to the flask level.

To the squeezer is attached a vibrator which so shakes the sand that the pattern may be drawn out without the operator tapping the pattern with his tool. The vibrator is driven by compressed air, and is set by the moulder to give the number of vibrations per minute necessary to loosen the pattern. The two parts of the flask are separated, the pattern removed, and the flask reunited. The flask is placed on the floor with others, in long even rows, preparatory to pouring. The large moulds are painted with lamp black to keep the sand from parting, and over each mould is placed an iron plate to prevent the mould from crumbling when the molten metal is poured in.

At three o'clock in the afternoon the pouring takes place. Molten iron is drawn from the cupola in ladles, each moulder pouring his own small castings, being assisted by a man from the tumbling room in pouring large castings. As a rule, each moulder moulds the same part day after day, thus developing a high degree of proficiency. Each bench moulder tempers his own sand, but one worker tempers and sifts all sand for the floor moulders.

The helper carries floor boards and flasks, cleans up after each pouring and is generally helpful to the moulder.

*What the brass moulder does.*—The brass moulder in Richmond works in the trough or on the bench. The essential operations are identical with those followed by the iron moulder. Finer and cleaner sands must be used, different mixtures followed for facing, and a greater allowance made for shrinkage. The brass products are parts of pneumatic tools, air blasts and plumbing and house fixtures.

*Special knowledge required.*—Moulders must possess a knowledge of moulding sand; green, dry, loam and facing sand; slight knowledge of metallurgy and chemistry, including action of metals and action of gases; and a knowledge of all the hand and machine methods of moulding. Machine methods have not yet been introduced into Richmond foundries.

*Special skill required.*—The moulder must operate squabblers and sand mixers; be skilful in tempering and cutting in inserting cores, in removing patterns and pouring metal.

*How special knowledge and skill are obtained.*—The apprenticeship system, by which most of the Richmond moulder is trained, has now disappeared. Helpers may become moulders. The trade is so highly specialized that there are few highly skilled men now in the work. For foremen, a knowledge of metallurgy and the chemistry of gases is essential and cannot be obtained during the routine of the foundry work.

*Promotion.*—Helpers may be promoted to moulders and moulders to foremen.

*Wages.*—Practically all moulding in Richmond is on a piece basis. Workers pay for scrapped moulds. It is said that moulders receive from sixteen to twenty dollars weekly. Helpers work in some foundries on a day basis and in others on a piece basis. Moulders sometimes hire and pay their own helpers; it is said that helpers receive from one dollar and seventy-five cents to two dollars per day.

### The Core Maker

*What the worker does.*—The core maker takes sand, previously mixed with oils and molasses, and packs it in a core box and makes the whole core, if it be a cone, cylinder or cube, or one half of the core if the shape is irregular. With irregular cores the two halves are wired or glued together. The cores are baked in an oven till sufficiently hard for use by the moulder. The work is usually done on a piece basis.

*Special knowledge required.*—The core maker must know how to prepare and mix sands, how to pack the core box, how to move the core and the proper oven temperature and proper baking periods.

*Special skill required.*—Deft fingers are required. The cores are fragile and must be carefully handled.

*How special knowledge and skill are obtained.*—The core maker starts as a helper and by working under the direction of the foreman attains the essential aspects of knowledge and skill required by the job. A period of months is usually required to develop proficiency.

*Promotion.*—Helpers may be promoted to core makers and core makers to foremen.

### **The Cupola Tender**

*What the worker does.*—The cupola tender receives from the office the formula for the charge indicating the amount of iron, limestone and fuel which goes into the charge. He attends to the loading and firing of each charge, being assisted by cupola laborers who wheel the materials on the loading platform, dumping them into the cupola. He also directs the drawing of the charge and the subsequent preparing of the cupola for the next charge. Preparing the cupola involves removing the slag and clay remaining against the walls, and the relining with clay of parts where the lining is thin or worn away.

*Special knowledge required.*—The cupola tender should have an elementary knowledge of metallurgy and chemistry, including fluxing substances, combustion and chemical composition of iron and steel.

*Special skill required.*—The cupola tender must be able to direct the relining of the cupola and the work of loading, firing and drawing the charge. He must be able to perform all these operations himself.

*How special knowledge and skill are obtained.*—As the cupola tender comes up from the ranks he obtains the necessary knowledge and skill by observation and participation. The theoretical knowledge necessary for success cannot be obtained on the job.

*Promotion.*—The cupola tender may find employment as a cupola tender boss. These positions are not numerous in Richmond.



### **The Cleaner, Grinder and Foundry Laborer**

*What the workers do.*—The cleaner knocks the core from a casting and cleans away the sand with a wire brush. He cleans small castings in a revolving tumbler which removes the sand. The grinder files, chips and grinds castings as they come from the foundry to remove "fins" and all excess metal. The cleaner laborer assists in preparing the cupola for a charge, in charging and drawing the charge. The moulder laborer breaks sand and digs out castings, works over old sand and mixes it with new, this last process being called "sand cutting."

*Special knowledge required.*—The laborer needs no special knowledge, other than that which may be obtained in a very short period of employment; the grinder must be able to properly use files, grinding wheels, chisels and compressed air hammers.

*Special skill required.*—The laborer and cleaner need only a few manual skills possessed by physically strong normal men. The grinder must be able to use the tools above enumerated.

*How special knowledge and skill are obtained.*—All necessary knowledge and skill may be obtained through the routine work in a short period of time.

*Promotion.*—The laborer may become a moulder's helper or cupola tender, but the cleaner and grinder are not likely to be promoted to other work.

### **SURVEY COMMITTEE RECOMMENDATIONS**

All of the metal trades of Richmond are of vital and increasing importance. The difficulty in attempting to organize preparatory courses is that the various metal trades are becoming split up into many sub-trades and occupations, each requiring specialized knowledge and skill which may be acquired in a relatively short time. Specialized metal machine operating and specialized sheet metal working are examples. The metal trades which are now important and which will remain important are machining, tool making, pattern making and moulding in foundry foremanship. There is a distinct need for all these trades in Richmond and a particular need for machinists. The Survey Committee recommends that trade preparatory courses, on a strict vocational basis, be organized for these trades, the content and length of each course to be determined by advisory committees from the respective trades.

For machine operators, the evening school should provide opportunities where men confined to one machine during the day may learn to operate a variety of machines. Blue print reading should also be included. By taking advantage of such courses, ambitious machine operators might become machinists.

Evening school courses for tool makers should be provided and should include metallurgy, the fundamentals of hardening and tempering and blue print reading. Such courses should be on a short unit basis. For machinists the evening school should offer machine shop practice, drafting and blue print reading and mathematics.

Blacksmiths and forge workers would profit by evening courses having in type the same content as suggested for tool makers.

Evening courses for sheet metal workers are vitally needed. Such courses should be on a short unit trade extension basis and include trade mathematics, drafting and lay out work.

Moulders and foundry workers would profit by trade extension evening courses in sand mixtures and metallurgy.



## CHAPTER IX

---

### INDUSTRIAL EMPLOYMENT: THE MUSICAL INSTRUMENT, CASKET AND FURNITURE MANUFACTURING

As there are a considerable number of identical occupations practiced in the musical instrument, casket and furniture industries, these three industries are grouped in a single chapter.

#### **The Musical Instrument Industry**

*Importance and scope.*—Like many of the representative manufacturing enterprises of Richmond, the piano industry has been long established, expanding year by year, until it now gives employment to about 850 workers. Three lines of musical instruments are manufactured: Pianos, player pianos and phonographs.

*Early use of piano.*—While the piano as now known, dates back for over a century, and before that to its forerunners, spinets and harpsichords, there have been more improvements in this instrument since 1900 than in any other period. Many of these developments have proceeded along the line of mechanical playing devices, which were at first attachments to an ordinary piano by means of which the keys were operated mechanically. Such mechanical devices have been succeeded by player pianos, in which the mechanism of the player is installed within the upright piano and acts directly on the piano action.

*Kinds of pianos.*—In general, two types of pianos are made—grands and uprights. The grands are triangular in form, and in size range from the concert grand, approximately nine feet in length, to the baby grand of six feet. The square piano has been succeeded by the upright, which is the instrument in general use to-day.

*The parts of the piano.*—Every piano consists of a number of standardized parts. Beginning with the case, which though for-

merly of solid cherry, rosewood, mahogany or other hard wood. The case is made of veneered stock, the principal parts are the frame plate, wrist plank, belly or sounding board, strings, and pedals.



A Jacobian Grand Piano.

*Manufacturing processes.*--The frame is made of cast iron and is held within the piano case. The string plate, as the name implies, is the cast metal plate mounted on the rear of the frame in which all the strings are attached. To the front of the frame is the wrist plank, which holds the tuning pins, around which the end of the strings is wound. By turning the tuning pins, the tension of the strings is regulated. Under the string plate is the belly or sounding board. This is a thin piece of wood, usually maple, which intensifies the sound of the strings. The strings are fastened at one end to the string plate and at the other end to the wrist plank, are made of steel wire, increasing in thickness from treble to bass. The bass strings are usually double and are wound.

The action is the mechanical device by means of which the hammers are forced against the strings. The action includes the hammers, dampers, keyboard and keys. The keys are made of ivory in all but the cheapest grades of pianos. The sharps are made of ebony, and correspond to chromatically altered notes, shorter in length than the naturals, projecting above them. When a key is pressed down, its rear end rises and lifts a jack. The jack throws the hammer against the strings. Simultaneously with the throw of the hammer, the damper is raised, thus allowing the strings to vibrate freely. The damper remains raised as long as the key is pressed down.

The hammers are made of hickory, white beech or other tenacious wood, which has enough elasticity to permit them to rebound. The heads of the hammers are covered with felt which is increased in thickness from treble to bass.



An Upright Piano of Substantial Design. The Product of Scores of Workers from a Great Variety of Trades.

Pianos usually have three pedals; the piano or soft, the forte or hard, and the tone sustaining pedal. When the soft pedal is pressed, all the hammers are thrown nearer the strings, thereby

reducing the striking distance by one-half. The hard pedal, when pressed, raises all the dampers, so that the strings struck even after the keys are released. The tone sustaining pedal, by means of its action, tends to prolong the sound.

*Player pianos and their operation.*—The player pianos are ordinary upright pianos, with the addition of a player action which consists of a perforated roll of music, on which is marked the musical notes and rests by words or signs, is played by means of automatic levers which take the place of the pianist's fingers. The power is furnished by an air motor operated by bellows blown by foot. Mechanical arrangements permit of loud or soft playing, as in a regular piano.

*Phonographs.*—The most recent invention in the musical world is the phonograph. By means of a sensitive compound disc, the sound of the human voice or the strains of orchestral music may be reproduced on a record which is mechanically operated. This branch of the industry has developed rapidly. The phonograph, from a simple and ineffective reproducer of sound, has been perfected until reproduction is practically perfect. This development has gone through a similar development in cabinet and case making, necessary to create an instrument of beauty.

*Seasonableness and overtime.* The few weeks prior to the Christmas season constitute the busy season in the musical instrument industry. The industry is not, as a rule, however, seasonal in nature. Overtime work, when necessary, is likely to effect the work of the departments and workers.

*Source and selection of workers.*—The factory superintendent is primarily responsible for the employment of all workers in the organized departments, in charge of a foreman, however, the hiring of new workers is done by the foreman. Many departments are operated on the contract system and the contractor hires and discharges workers at will. Practically all male beginners are employed as offbearers in the mill rooms, and many are subsequently transferred to other departments, when vacancies occur and a larger force is needed.

### The Casket Industry

*Importance and scope.*—Casket making is the most important cabinet making industry in Richmond, and one of the most



The Phonograph—The Latest and Most Perfect Sound Reproducing Instrument. Its Perfection Has Involved the Use of New Materials and the Development of New Processes and Trades.



portant industries in the city. There are employed in establishments, approximately 225 workers. The output of the factory alone is said to be 1,000 caskets a month. Some of the wide range and variation of this product may be gained from the statement that one of the establishments makes over 100 different styles and shapes of caskets.

*Manufacturing processes.*—In the making of caskets various kinds of cabinet woods, including oak, mahogany and black walnut are used for the polished caskets, and chestnut for the painted caskets. The lumber is planed and cut to size, distributed to different departments, and cut into tops, bottoms, sides, ends, which are subsequently assembled. After assembled, the casket is either covered on the outside with cloth and lined with quilting, or stained, or filled and polished, according to the design used and the grade of job required, after the interior trim is applied. The casket is crated and stored, awaiting shipment.

### The Furniture Industry

*Importance and scope.*—The products of the Richmond furniture factories are household furniture and kitchen cabinets, the latter being the most important branch. The combination of these two branches employ about 150 workers.

*Manufacturing processes.*—Wood is purchased in the rough and dried in a kiln and then cut to size, after which the various milling operations are performed. Assembling, glueing and finishing complete the manufacturing processes.

### Occupations and Number Employed

#### Occupations Common to the Three Industries

	Males
Foremen, wood machine operators.....	6
Wood machine operators and helpers.....	161
Gluers.....	11
Benchmen and assemblers.....	55
Foremen, finishers.....	5
Finishers.....	152
Packers and box makers (not analyzed).....	24
Yard force and laborers (not analyzed).....	84
Total.....	498

**Occupations Peculiar to Piano and Phonograph Making**

	Males	Females
Foremen, cabinet makers.....	3	.....
Cabinet makers.....	110	.....
Foremen, veneer workers.....	2	.....
Veneer workers.....	17	.....
Key makers.....	22	.....
Action workers.....	26	.....
Fly finishers.....	23	.....
Tool and hardware makers (see Chapter VIII)	41	.....
Plate drillers.....	12	.....
Stringers (not analyzed).....	6	.....
Key clampers (not analyzed).....	6	.....
Tuners (not analyzed).....	11	.....
Record makers (not analyzed).....	7	.....
Repair workers (not analyzed).....	9	.....
Total.....	295	.....

**Occupations Peculiar to Player Piano Making**

	Males	Females
Superintendents (not analyzed).....	1	.....
Miscellaneous occupations.....	.....	.....
Bellows makers.....	10	.....
Action assemblers.....	11	.....
Motor assemblers.....	4	.....
Action regulators.....	2	.....
Bushers, valve setters, etc.....	.....	20
Stencil cutters.....	.....	9
Music roll cutter.....	.....	1
Total.....	28	30

**Occupations Peculiar to the Casket Industry**

	Males	Females
Coverers and trimmers (see Chapter IV).....	52	6
Cutters, sewers and tufters (see Chapter XII) ..	.....	28
Total.....	52	34

### The Foreman, Machine Operators

*What the worker does.*—The mill foreman routes all work directed by the office, and is held responsible for the output of the department. He employs and discharges all machine operators.

In piano manufacturing, he directs the cutting up of rough stock into tops, rims, frames, lower frames, upper columns, arms, feet, plinths, tablets, key slips, key blocks, beds, bows, key moulding, top moulding, end moulding, beads, finger stop, upper frame moulding, lower frame moulding, lower blocks, fillets, corner fillets and corner bases. The foreman receives instructions from the office concerning the number and type of instrument to be manufactured and the size and shape of all the wood parts, with the exception of the posts. He transmits these instructions in written form to each workman.

*Special knowledge required.*—The foreman must be familiar with various kinds of woods, their grains and the use of each part of the instrument. He must have a thorough working knowledge of the machines in his department, and the work each will do. The mill room foreman must be familiar with the factory system, in so far as it concerns the mill department. He must understand the office order system in receiving orders for parts and reporting work done, and the relation of his department to others with reference to timing and routing work.

*Special skill required.*—The foreman must manage a gang of workmen and keep the output up to the office demands. It is necessary that he be able to set up and operate, if necessary, any machine in the mill room.

*How special knowledge and skill are obtained.*—The foreman usually obtains the necessary training for his work by working as a machine operator or mill man in factories where the work is shifted from machine to machine, during the course of the work.

*Promotion.*—The mill room foreman is eligible for promotion when there is a vacancy in the position of superintendent.

### The Wood Machine Operators

*What the cut-off saw operator does.*—The operator cuts wood stock in the specified lengths, the saw being swung

wood table, which is graded in feet and inches, thus obviating the use of a rule. In the smaller establishments, the operator files and sets his own saw.



Double Automatic Cut-off Saws.

*What the rip saw operator does.*—Rip saw operators receive stock cut to length, rip off one rough edge and then rip the stock into proper lengths. They place the stock on an endless belt platform, which carries it into the machine. Operators may or may not set up and adjust their own machines, depending upon the size of the department in which they work.

*What the band saw operator does.*—The operator first marks the lines along which cuts are to be made, using a template. Four or five pieces of stock are placed in special forms and sawed to shape. The saw is a thin, continuous steel band, mounted over two wheels. Between the wheels is a saw table with an opening through which the saw runs. This saw is used in sawing curves and irregular shapes.

*What the scroll saw operator does.*—The scroll saw operates with a reciprocating motion by means of a crank and connecting rod. The operator guides the stock through, cutting to the line

indicated. He starts a cut at any point he may desire, by a hole through the stock, unfastening the saw and refast through the hole.

*What the planing operator does.*—The planer feeds the r into the machine, between rollers, forcing it over rapidly re cutters, which chips one surface perfectly level and eli warp and irregular surfaces. The operator in rough plani be obliged to send the stock through a number of times i to eliminate twists or other irregularities in its surface. l ing this the board may go to an operator who surfaces the side to the proper dimension. This is known as finished p

*What the jointing operator does.*—The jointer places the on the machine table and by means of hand pressure, pa across the revolving planer knives. The operator usually s and adjusts his own machine. The knives are sharpened other department. The jointer is used to straighten, smoot bevel boards.

*What the moulding operator does.*—The operator of a mo machine, as the name implies, prepares moulding and sq stock. He may, and usually does, set up his machine to four surfaces simultaneously, or by the use of special knives, s each surface differently.

*What the tenoning operator does.*—The operator places the on a carrier which bears it to the machine which is equipped four heads, two of which are "rough cut" and the others " cut." The resulting tenon fits into a mortice.

*What the mortising operator does.*—The mortising machin mortises into which tenons fit. Single and double machin in use. The operator sets up the machine, inserting the c tool of the proper size, and gauging the location and depth c cut. The tool consists of a drill, revolving in a hollow s cutting chisel. The operator places the stock against the on the machine table, raises the table with a foot lever, a leases the lever when the cut is made.

*What the shaper operator does.*—The shaper is equipped a spurred metallic belt which clasps the wood and carries it the shaping tool. The shaper resembles a moulding machin cept that it faces but one face at once. It is used largely for f ing the edges on irregular shaped stock

*What the boring machine operator does.*—The operator lays the stock against the gauge on the milling table and forces it against a revolving auger set in a spindle. He operates his machine by a hand lever

*What the spindle operator does.*—In spindle carving, the operator cuts stock to the desired shape, by holding it against a revolving cutter at the end of a spindle. The stock has been rough shaped previously, by a band saw. All manner of decorative designs may be cut on this machine. After being carved, the stock usually passes to a sanding machine.

*What the sanding operator does.*—The sanding operator presses wood stock, cut to size and shape, against revolving sandpaper surfaces, thus eliminating all planing furrows and smoothing the stock surface.

*What the glue joining operator does.*—The operator places the stock edge down upon a long table and feeds it by hand until it touches a corrugated endless belt. The belt carries the stock over revolving knives, which perfectly “true up” the edge. The helper feeds the stock into the second unit of the machine, which performs a similar operation on the reverse edge and returns it to the operator. This machine will only “take” narrow stock, and is used primarily for glueing up piano ends. The operator sets up, operates and adjusts the machine, but the knives are sharpened in the machine shop.

*What the helpers do.*—Each machine operator is assisted by an offbearer, or helper, whose work is receiving the stock after it has passed through the machine, and placing it in a neat pile on the floor or on a truck. Offbearers are usually young men.

*Special knowledge required of all operators.*—All operators must recognize the various kinds of woods, their grains and how to feed the stock into the machine. Practically all operators must know how to set up their machines, including inserting and removing cutting tools, adjusting gauges and the angle of the cutting table; how to operate the machine and how to file and sharpen the machine cutting tools.

*Special skill required.*—Operators must feed the stock into the machine so that it will not clog or “back fire”; they must quickly and accurately set up the machine, including table and gauge

adjustments and mounting cutting tools; and they must control the machine.

*How special knowledge and skill are obtained.*—Machinists are recruited from among the offbearers and help become familiar with machine adjustments, wood stock and routine during their period of employment as offbearers.

*Mental and physical requirements of workers.*—Machinists must be physically strong, as they must lift heavy planer stock from the truck or floor to the machine table. Good eyesight is a requisite.

*General education required.*—At least a complete elementary school education is essential, as operators must use the planer measuring stock; figure in decimals, fractions and whole numbers; read intelligently written orders and report in writing the work done.

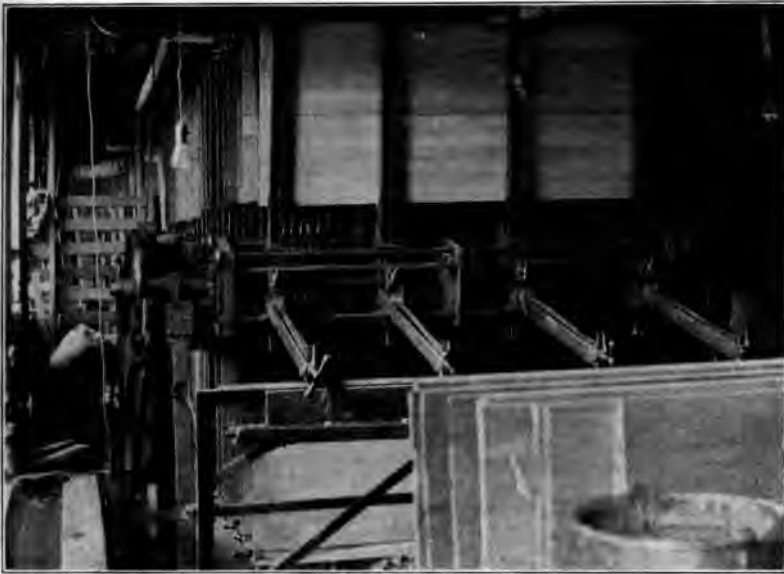
*Hazards and inherent character of the work.*—Unguarded planer and cutting tools, revolving at a high rate of speed, entail a continual risk to the worker. Although blowers remove most of the mill dust, the air is constantly laden with free sawdust and particles of wood stock.

### The Gluers

*What the glue cook does.*—The glue cook places flaked or planer glue stock in a steam kettle of cold water. After the glue has reached the consistency of gelatine, the steam is applied, and the kettle is allowed to simmer until it is thoroughly cooked and ready for use. The glue cook delivers the prepared glue to the smaller vessels or containers for the various gluers.

*What the edge gluer does.*—The edge gluer glues together the early cut and planed stock, edge to edge. The stock is taken from the truck and placed, piece by piece, on a metal heating plate by means of which the stock is sufficiently heated so that it will not set too rapidly. The edges of the stock are dipped in the glue trough, and the pieces thus dipped are assembled on the glueing frame and clamped with ordinary metal door clamps. These clamps are a part of the gang glueing machine. These clamps are attached to a series of endless chains, and after one unit of stock is assembled and clamped, another set of clamps are brought into working position, and so on, until about thirty are glued together.

which time the first unit may be removed. The glueing processes may thus proceed continuously. Each edge gluer is assisted by a helper who scrapes the dry glue from the glued boards with a steel scraper mounted on a wooden handle.



Edge Glueing Machine.

*What the furniture gluer does.*—The furniture gluer works on a bench equipped with forms necessary to receive the parts to be glued. After the glue is applied, the parts are clamped and carefully stacked away to “set.” This gluer prepares his own glue and keeps it in working condition.

*Special knowledge required.*—All gluers should know the proper working temper of glue, proper heat for wood stock and how to use all kinds of glueing clamps.

*Special skill required.*—Skills consist of keeping glue at proper temperature, of applying glue to the stock surface and of lining up stock or parts with a hammer or mallet, applying clamps, and scraping off hardened glue.

*How special knowledge and skill are obtained.*—The necessary special knowledge and skill may be obtained during the process of the work, by following the foreman’s instructions.



*What the painter does.*—The rough coats for pianos are applied by the painter, who uses a broad, thick bristled brush. The coat must be evenly applied over the entire surface of the case. This operation differs in no essential particulars from ordinary painting work operations. The final painting coat requires great skill.

*What the varnisher does.*—Varnish coats are applied by the varnishers in the same manner that the painter applies paint coats. As the varnish dries very quickly, the coat must be applied with an even stroke, without overlapping. The final "finishing" coat requires a high degree of skill.

*What the finish rubber does.*—To obtain a high polish, the finish rubber draws the palms of his hands lightly across the surface. He also uses rotten stone and water. The rotten stone, enclosed in a bag, is rubbed over the wood in the same manner. The palms of the hand are drawn over it.

*What the toucher up does.*—In the finishing of pianos, some parts may become roughened or dulled. It is the duty of the toucher up to "touch up" with a small brush, in a careful manner, the parts which have been marred.

*Special knowledge required of all finishers.*—Painters must be familiar with kinds of paints, oils and varnishes; thinning and mixing processes; and the length of time required for their drying. A sense of color and harmony and a knowledge of wood grain is also required. For priming and filling, only a rudimentary knowledge of painting operations is needed. For rubbing, a knowledge of how best to bring out the beauty of the wood is needed. In rough rubbing, a knowledge of the grain of the wood is needed, together with the kind of stone to use.

*Special skill required of all finishers.*—Painters and varnishers must apply coats evenly and without brush strokes. This is particularly essential in finishing operations. The finish rubber must rub the surface evenly, and the finishing rubber must draw his hand over the varnished surface so as to obtain a high gloss. Stainers need but the rudimentary technical knowledge incident to dipping the brush into the stain and applying it to the surface.

*How special knowledge and skill are obtained.*—During the course of the work, finishers develop the "tricks of the trade." They cannot acquire the chemistry of paint and varnish mixtures.

*Promotion.*—In some establishments, a rubber may become a painter, and subsequently, perhaps, a varnisher.

*Hazards and inherent character of the work.*—The finishing occupations are recognized as hazardous, subjecting workers to various forms of poisoning. These hazards may be reduced to a minimum by taking the proper hygienic precautions

### **The Cabinet Foreman**

*What the worker does.*—The foreman directs the work of the machine men, cabinet workers and cabinet makers' helpers. He distributes the work by a series of key numbers. Each part of the cabinet of a talking machine or piano case, bears a number applied with a metal stencil, so that the worker knows when he has completed the parts of one case or cabinet. The numbers used range from one to a thousand, after which a new series is begun.

*Special knowledge required.*—A complete knowledge of cabinet making and a specialized knowledge of the trade as applied to the making of talking machine cabinets and piano cases is essential. A knowledge of cabinet woods and their uses, and cabinet designing is also required.

*Special skill required.*—The foreman must be able to operate any machine in the room, perform any hand process and explain all phases of the work to new men.

*How special knowledge and skill are obtained.*—The trade knowledge is acquired during the cabinet makers' apprenticeship and through years of experience in the trade. Knowledge of design and estimating are obtained through technical school courses.

### **The Cabinet Makers**

*What the cabinet maker does.*—In making phonograph cases, the cabinet maker sandpapers the various parts which are received cut to size, and glues them together. He installs the cabinet lining and attaches moulding, both inside and outside. His work requires the use of the hand tools of the trade.

*What the matcher does.*—The matcher examines the wood case parts of pianos and phonographs, and sees that all match properly and belong to the particular assembly unit. The key number marked on each part assists him in matching.

*What the wood horn maker does.*—The wood horn for phonographs receives all parts cut to size, glues them in place, places a template over the horn and drives long, thin nails through the joints in places indicated by the template.

*What the piano bench maker does.*—The bench maker glues and screws the bench parts together, receiving them cut to shape. He trims parts with hand tools, sandpapers and scrapes off surface glue.

*Special knowledge required.*—All cabinet makers must have complete knowledge of their trade; blue print reading; woods; tools of the trade and methods of glueing, screwing, assembling, sandpapering and scraping.

*Special skill required.*—The skills include the correct use of tools, and speed and accuracy in assembling, fitting and gluing.

*How special knowledge and skill are obtained.*—The older men are products of apprenticeship instruction. Youthful workers now learn some of the rudimentary processes by practice and observation, but the technique of blue print reading is acquired during the course of the work.

*Promotion.*—Helpers may become cabinet makers, and cabinet makers may be promoted to foremen of the cabinet department.

### **The Veneer Foreman**

*What the worker does.*—The veneer foreman supervises veneer and glueing operations, including hand and gang glueing, hydraulic pressing, glue spreading and veneer matching, tapping and laying.

*Special knowledge required.*—The foreman must have a working knowledge of veneer stock and base materials; the operation of presses and clamps and the suitable pressure for each, and proper temperature for the drying room. The veneer foreman must know markets and buying methods, and be able to select qualities of veneers.

*Special skill required.*—The foreman must be able to perform all the various veneer occupations subsequently enumerated and described.

*How special knowledge and skill are obtained.*—By service

worker in the various veneer occupations, the necessary aspects of knowledge and skill are acquired, except buying and methods.

### **The Veneer Workers**

*What the veneer marker does.*—The veneer marker is furnished with an order indicating the size, shape and number of each piece of veneer required. He obtains the stock from the drying room, cuts the binding cords, and matches the grain of the two veneer pieces which he pairs. On the stock, he chalk marks the proper trade number.

*What the veneer cutter does.*—The cutter receives the marked and matched stock from the marker. By referring to the key table furnished by the office, he obtains the cutting dimensions of each piece. He places the stock on the cutting table which is graduated in feet and inches, and by means of a long, tapering knife, controlled by foot power, cuts the veneer into required sizes.

*What the veneer taper does.*—The two matched veneer pieces cut to size are taped together before being glued to the stock. The taper operator feeds the two pieces into the machine, which draws them tightly together by means of cone shaped rolls, as a narrow ribbon of gummed tape is automatically applied, thus holding them together.

*What the veneer layer does.*—The veneer layer performs the various operations incident to applying the cross beading to board sides of the core, and the veneer stock to the board sides of the cross beading. These operations involve, roughly speaking, passing the cross beading, which may vary in width from one-eighth to one-fourth inch, through the glue spreader; placing the cross beading upon the core stock; then applying the actual veneer which is about one-thirty-second of an inch in thickness to the cross beading. The grain of the cross beading runs in the opposite direction from the grain of the core stock, and the grain of the veneer stock, in the opposite direction to that of the cross beading. By this process, a relatively thin board, between one-half and three-eighths of an inch in thickness, may be made so strong that it will not warp. These boards are used for the top and other parts of the phonograph where strength, durability and resonance are required. The process which is above described, results merely in bringing together the various pieces of stock in

the veneer process. There still remains the whole process of placing and clamping which is essential in actually joining the surfaces together.

Between each part of veneered stock, a call board is placed, and when a pile of sufficient size is made, it is trucked over a hydraulic press where a pressure, varying from fifteen hundred to three thousand pounds, is applied, according to the need of the stock and the veneer. By means of clamping locks, this pressure is maintained and the whole truck may be removed from the press and the stock set to dry. Call boards may be made of iron into which has been rubbed wax or oils, thus filling the pores and making the wood impervious to glue. The call boards are heated in a steam room to a temperature of about two hundred and twenty-five degrees. By inserting the call boards thus heated between the glue which has partly cooled and set, is thus brought back to life. Without artificial heat, a considerable period of time, perhaps three weeks, would be required for the glue to set, so that the process of milling and finishing may be carried on. This period has been shortened to over-night by installing a drying room into which the stock is put at night and then subjected to heat of about one hundred and fifty degrees. By morning, the stock is thoroughly dry and then may pass on to the milling and finishing rooms.

In finishing piano feet, the veneer is applied directly to the core stock, eliminating the cross beading. In this process, glue is applied to one side only of the veneer, after which the clamping process takes place. The veneer projecting beyond the core stock, is trimmed off flush, by a hand operated knife, and the end surface is smoothed for the veneering, by being held against a belt of revolving sandpaper. Veneer is then applied to the end and clamped with hand operated screw clamps. Veneer stock which may be used during the course of the work may be mahogany, poplar, rosewood, oak, walnut, satin wood, maple wood and teak wood. Helpers assist the veneer layer.

*Special knowledge required of all veneer workers.*—The veneer marker and cutter must be familiar with the office order system, the kinds of veneer stock and methods of matching. The veneer layer must know the proper temper and consistency of glues for core and veneer woods, the proper temperature for stock and call boards and the proper pressure for the hydraulic press.

*Special skill required.*—The veneer matcher must quickly recognize grains which will match, and the cutter must place the stock on the cutting table so that there will be the least possible waste. The taper must adjust the taping machine, seeing that the cone wheels draw the veneer together and that the taping ribbon is applied firmly. The veneer layer must be skilful in feeding the cross beading through the glue spreader, must properly place the cross beading on the stock, and the veneer stock upon the cross beading. All these operations must be performed quickly. He must operate the hydraulic press and apply the lock clamps.

*How special knowledge and skill are obtained.*—The knowledge and skill necessary for the veneer operations may be obtained during the course of the work by following the instruction of the foreman and by observing other workers.

*Promotion.*—Veneer markers may become veneer cutters; veneer laying helpers may become veneer layers.

### The Key Makers

Key making is done on contract. The foreman who is the key maker, is the contractor. All workers are responsible to him.



Ivory Laying Machines.

*What the key layer out does.*—The base of the piano key is wood. A great number of narrow strips of basswood are glued together and surfaced, forming the wood plate from which all keys are cut. By the guidance of a template, the layer out marks the plate the outline of all keys and the pivoted holes for each key. All holes are drilled, still using the template as a guide. A second operator reams out each hole.

*What the key maker does.*—The key layer, who is the foreman, cuts, glues and clamps the ivory veneer for each key, to the wood plate. He uses any one of five grades of ivory. The ivory is in strips about the width of a piano key. These strips are heated in an oven, the temperature of which varies from one hundred to one hundred and twenty degrees. When sufficiently dry, the key maker cuts the stock into key veneer sizes, by means of an ivory joiner, by which perfect right angles are obtained.

He next lays the strips of ivory on a ledge above the key plate



Key Scraping.

ing machine, in the same order which the keys are to be on the piano. When this is done, he starts at one end of the machine and applies a light coat of glue on the under side of the ivory and quickly snaps it in position on the wooden key plate. This operation

repeated until all the keys have been laid. He then applies a number of clamps which are attached to the machine and with one movement brings them all directly over the ivory keys. Pressure is brought both from the top and back of the machine by means of geared wheels. From experience, the operator knows how much pressure to apply.

*What the key shaver does.*—After the keyboard has been covered with ivory strips, each one representing a key, it is taken to the ivory shaving machine. The operator of this machine holds the keyboard under a rapidly revolving edged tool, circular in shape, which revolves in a horizontal plane the full length of the keyboard, and which shaves any “high spot” which it meets in traveling over the board. As the shaving blade progresses, the operator regulates it almost constantly, so as to take off the shavings of ivory wherever necessary. The result of this operation is a perfectly smooth ivory surface, with no ridges or high spots.

*What the key cutter does.*—By means of a template, the exact outline of each key is marked on the ivory covered key plate. By using the band saw, the cutter cuts the plate into piano keys. There is just enough space between each key as marked out on



Key Sawing.



the plate, for the width of the band saw. Thus great care sawing is required.

*What the key filer does.*—The key filer files the ivory veneer covering each key even with the wood, slightly bevelling outer edges. This work is done by a woman.

*What the key sander does.*—The sander presses each key firm against the sanding machine, which is covered with a very fine grade of sandpaper. This smooths the ivory, preparatory to polishing.

*Special knowledge required of all key makers.*—All key makers must know the various grades of ivory, and how to operate the respective machines incident to each key operation enumerated. The key maker proper must be a thorough judge of ivory qualities and how to dry and cut veneer stock; how to prepare glue and keep it properly tempered and how to lay ivory and operate the clamping machine. As he supervises the work of others, he must be an expert in each particular part of the process.

*Special skill required of all key makers.*—The layers and drillers need merely the technical skills necessary to place the veneer plate on the key plate board, and drill the holes as indicated. The key maker, during the course of his work, brings to play a large variety of skills, difficult to acquire. He must be expert in drying ivory stock, in cutting stock to exact size without waste in preparing glue, in key laying, and lastly, in key clamping. He must be able to shave, file and polish keys and show others how to perform these operations.

*How special knowledge and skill are obtained.*—During the course of the work, layers, markers, shavers, filers and sanders may develop the necessary proficiency by following the foreman's instructions. The present foreman served an apprenticeship abroad, but no scheme is here effective for training new foremen.

*Promotion.*—No promotional scheme is operative in this department.

### The Action Finishers

*What hammer and damper fitters do.*—Hammer and damper fitting require a greater degree of skill than any other action finishing occupation; of the two, hammer fitting is the more difficult

The hammer fitter strikes the key again and again, adjusting the hammer so that it strikes the wires in exactly the proper position at the proper angle. He mounts the hammer in position and glues it carefully into place on a wooden joint. The damper fitter notes the damper action; whether it raises simultaneously as the key is struck, and falls against the wire as soon as the key returns to its position. He mounts and glues the damper into correct position.

*What the action installer does.*—The action installer is an assembler who fits the action carefully into its designated position in the piano case. Each part must fit into correct position in order to operate properly. The work is not considered highly skilled.

*What the key finisher does.*—The operator installs each key in its proper place in the piano. The keys are all laid out on a table or board before being installed, then each key is fitted into its respective position and adjusted so as to operate perfectly with the hammer and damper.

*Special knowledge required of all action finishers.*—All action



Regulating Piano Action.

finishers must be familiar with the mechanical action of piano tone production, as related to the operation of keys, hammers and dampers. They must know the function each part is expected to perform and how to adjust it to obtain the desired results. Knowledge of how to prepare glue and keep it in good condition and how to glue wood and felt is required.

*Special skill required of all action finishers.*—Skills consist in quickly and accurately making fine and careful adjustments of action parts, and of using the tools of the trade dexterously.

*How special knowledge and skill are obtained.*—The necessary knowledge and skill may be obtained during the process of routine work.

*Promotion.*—The damper fitter may be promoted to hammer fitter.



Inspecting Piano Player Mechanism.

### The Fly Finisher

*What the worker does.*—The fly finisher fits together into position in the case, the smaller wood parts after the piano is painted and polished. This work corresponds to the final assembling in the automobile industry.



Grand Piano Fly Finishing.



Regulating Piano Action.

### The Tool and Hardware Makers

For a description of the work of tool makers, see Chapter "Railroad Repairing, Machine Tool Manufacturing and Metal Industries."



Installing Piano Action.

### Miscellaneous Occupations

*What the bellows maker does.*—The bellows maker receives board and felt, cut to size. He glues and nails the felt to boards, resulting in the formation of a rectangular shaped bellows, operated by springs controlled by foot pedals.

*What the action assembler does.*—The action assembler sets valves of the player in place and regulates them. The work is entirely mechanical.

*What the motor assembler does.*—The motor assembler assembles motor crank, sprocket crank hanger, guides and connecting rods and connecting tubes. After assembling, he "tunes" each of four cylinders, so that each "fires" and opens in its proper order.

*What the action regulator does.*—The action regulator moves the hammers and keys in their proper positions, and observes

dip or stroke of each hammer under manual and automatic control, as both player and piano action must have the same stroke.

*What the bushers, valve setters, etc., do.*—These women operators work on a number of small and delicate parts, required in player piano construction. They cut and paste felt strips and bushings on boxes; glue and shellac rubber tubing on pneumatic; glue leather on bars, valves and other small parts; and operate punch presses in cutting leather and paper washers.



Marking Music Rolls.

*What the stencil cutter does.*—The stencil cutter cuts from the master copy, the stencil which is placed in the automatic music roll cutting machine. The master copy is cut by the manual playing of the piano. It is cut on specially prepared, light flexible paper, by a machine which is connected with the manually played piano. This flexible paper is pasted over a strong, heavy paper. The stencil cutter works with a chisel, cutting each note by hand. When the roll is finished, it is tried out on a player piano. The copy comes back with marked corrections. In order to see all defects, the operator lays the copy on a table with a transparent glass top, under which is a row of lighted electric lights. As she unrolls the master copy, the pencil marks on the



Cutting Master Patterns for Music Rolls.

notes show what changes are to be made. These are made after the copy has been rechecked, it is ready to be used for making other copies on the cutting machine.

*What the music roll cutter does.*—The music roll cutter is a stencil cut on heavy paper by hand, over sixteen blank rolls. She mounts the entire number of rolls in the machine which operates on the principle of the Jacquard loom. It has eighty-eight long finger like levers, known as finders, and as the master roll passes along, the finder comes in contact with the roll and the machine automatically punches the sixteen sheets.

#### **The Coverer and Trimmer The Cutter, Sewer and Tufter**

In the manufacture of caskets, these occupations require practically the same type of knowledge and skill as those



Music Roll Perforating Machines.



Glueing Bellows for Player Pianos.



ployed in similar occupations in the manufacture of automobiles and workingmen's wear. For occupational descriptions, reader is referred to Chapter IV, "Automobile Manufacturing" and Chapter XII, "The Knitting, Glove and Workingmen's Wear Industries."

### **SURVEY COMMITTEE RECOMMENDATIONS**

These industries require skilled wood machine operators, gluers, cabinet makers, benchmen, assemblers, finishers, painters, yard hands and laborers, in addition to a large number of workers engaged in trades peculiar to one of the three industries.

Operators of wood machines are, in the main, confined to one machine which they have learned to operate by first serving as an offbearer. Evening courses in plan reading and in the operation of various wood machines, should be provided for ambitious workers. Such courses would assist workers in attaining promotion to foremanship positions. Trade extension evening courses should be provided for cabinet makers, benchmen and assemblers. Such courses should be on a short unit basis and include plan reading, trade mathematics and technical work in cabinet making.

The musical instrument industry of Richmond, employs not only many workers in the lines above mentioned, but workers in a large number of highly skilled occupations peculiar to the industry. Among these are designers and draughtsmen, veneer layers, sounding board makers, keymakers, action finishers, and finishers, stringers, tuners and many others too numerous to be recorded in detail. The number employed in any of the above lines is insufficient to justify the Richmond Board of Education in providing trade preparatory or trade extension courses. Furthermore, the expense of machines, tools and other equipment, and the teaching staff would be prohibitive. If Indiana is to contribute to the education of these workers and to the training of new workers in these highly specialized and skilled occupations in order to aid in the development of the musical instrument industries, a State Middle Technical School will have to be established. Such a school for this industry might well be located in Richmond, and attendance open to workers now engaged in the industry, residing in Indiana or other states, and to young men who have not entered the industry, but who desire to prepare for it.

## CHAPTER X

### INDUSTRIAL EMPLOYMENT: JOB AND NEWS- PAPER PRINTING

The printing industry in Richmond is typical of any town of its size in the state. There are two newspaper and six job shops. The job shops print college annuals, bulletins, catalogs, office forms and stationery and miscellaneous job work. All the job shops do pamphlet binding, but one has a well organized bindery, doing high grade bookbinding.

The printing industry has followed the natural course of the development of the productive and mercantile life in the city. It is estimated that there has been at least a twenty per cent. increase in output and volume in the printing business during the last decade in Richmond.

As the printing trades are well standardized the country over, and have been studied with great care in previous surveys, no field work was done in Richmond in preparation for this report. The facts were obtained through conferences and by reports furnished by workers and proprietors. Previous survey reports of the printing trades upon which dependence may be placed, are:

Report of Richmond, Virginia, Survey, Bulletin Number 162, United States Bureau of Labor Statistics, Washington, D. C.

Report Printing Trades, Cleveland Education Survey, Russell Sage Foundation, New York City, N. Y.

Printing Trades of Cincinnati, Chamber of Commerce, Cincinnati, Ohio.

Report of Minneapolis Survey, Bulletin Number 21, National Society for Promotion of Industrial Education, New York City, N. Y.

#### Characteristics of the Trades

*Small shops.*—The job shops of Richmond are all small, none of which employ over twenty workers. The filling of orders received locally and from the Richmond district comprise the bulk of the work.

*Proprietors and workers.*—The majority of the proprietors of small shops take an active part in the work of the shop, generally in hand compositing and display work.



A Modern, Well Lighted, Newspaper Composing Room.



A Newspaper Stereotyping Room.

*Proof reading.*—As a rule, proof reading is done by the female office assistant, who is also bookkeeper, order clerk and stenographer.

*Engraving and lithography.*—None of the various steel and copper plate engraving, lithographing, and photo-engraving processes are carried on in Richmond. The newspaper shops send orders of this nature to Dayton, Ohio.

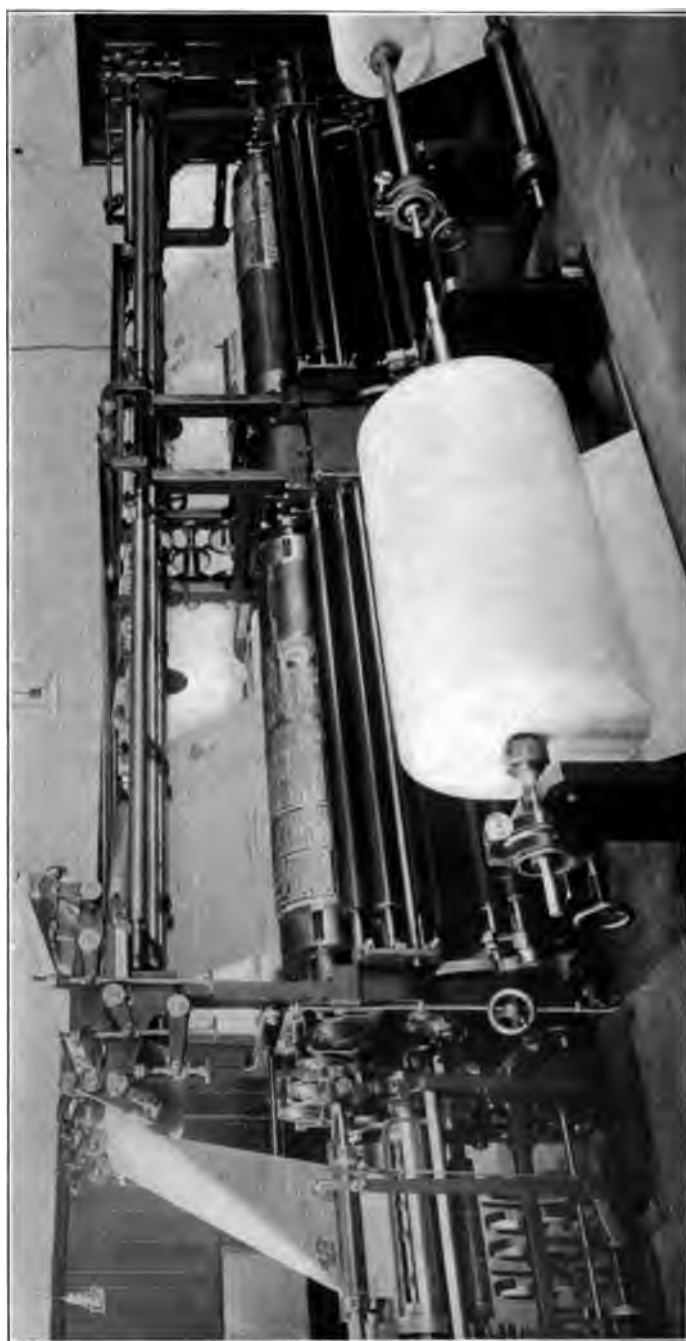
*Apprenticeship.*—There is a well defined system of apprenticeship in the printing trades. The apprenticeship agreements specify length of apprenticeship, scale of wages and necessary instruction. The details of apprenticeship are reported in the occupational analysis.

*"All around workers."*—There is a continual interplay of participation and suggestion among workers themselves in the various printing trades, and between workers and proprietors. The variety of work to be done and the small number of total workers employed, means that specialization in the printing trades is not carried as far in Richmond as in larger cities. The "all around printer" in Richmond is most valued; in fact, under existing conditions, there is no place in Richmond for the exclusive specialist. For example, none are employed exclusively as stone hands, stereotypers or makeup men. All these lines of work are done by either compositors or pressmen. While the range of work required of each man tends to develop a worker of greater adaptability, it is also true that these conditions tend to reduce or raise all workers to the same level of speed, efficiency and wage.

#### Occupations and Number Employed

	Males	Females
Proprietors*.....	3	..
Composing foremen.....	5	..
Compositors: Hand and machine.....	28	1
Apprentice compositors.....	6	..
Head pressmen and foremen.....	4	..
Pressmen, Cylinder, platen and web.....	11	..
Apprentice pressmen.....	3	..
Press-feeders: Cylinder, platen (2 males on part time).....	7	..
Cutting machine operators.....	2	..
Binding operators.....	3	10
Total.....	72	11

\*Only proprietors who actually engage in the printing processes are listed.



### Facts Common to All Workers

*Working conditions.*—With one exception, the printing trades are carried on in Richmond in converted buildings, with all the defects usually present in such structures. This means inadequate light, ventilation and floor space. One modern building, the home of a newspaper print shop, is a splendid example of improved conditions resulting from building a structure particularly for the work to be done. It is well lighted, heated and ventilated and a constant source of inspiration to workers to put forth their best efforts.

*Hazards and inherent character of work.*—From the standpoint of health, printing is a hazardous occupation. Compositors, for example, are prone to lung diseases. The number of deaths among them, from pulmonary tuberculosis, is more than double that in most outdoor occupations and far greater than in most indoor occupations. Linotype operators are in constant danger of lead poisoning.

*Hours.*—An eight-hour day is observed in all the Richmond print shops. This is made possible by a very complete trade union organization. During July and August, the duller months in the trade, several shops work but four hours on Saturday. The four hours thus lost each Saturday are made up by overtime during the winter and spring months.

*Source and selection of workers.*—The foremen of press and composing rooms, as a rule, hire all employees in their respective departments. Thus, workers secure positions by direct application to foremen. In the newspaper shops there is a general understanding that those employed as substitutes will be eligible for appointment in case of a vacancy in the regular force. As substitutes have prior right to vacancies, it is essential that great care be exercised in employing substitutes.

### The Foreman Compositor

*What the worker does.*—The foreman of the composing room oversees the work of all the hand and machine compositors and the apprentices. He may also do proof reading and makeup and imposition work. The foreman receives his orders directly from the proprietor, assigns work to each compositor, keeps check on time

for each job and the efficiency of each worker. He is responsible for all phases of composition, makeup and imposition.

In the newspaper shops, a single foreman superintends the work of composing, stereotyping, and press work. He must keep the workers up to maximum speed and route the work so that delay may be avoided.

*Special knowledge and skill required.*—The foreman must possess the knowledge and skill required of all compositors, as well as directive and managerial ability and ability to estimate cost and time.

*How special knowledge and skill are obtained.*—The foreman is picked from among the compositors and he has usually learned the trade in a four years' apprenticeship. As a rule, however, special school courses in estimating, design, English, and punctuation are necessary for efficiency.

*Wages.*—Weekly wages range from twenty to twenty-five dollars.

### **The Hand and Machine Compositor**

*What the worker does.*—In hand composing the compositor picks the type, one by one, from a case, places them in a composing stick, and when a number of lines are composed removes them from the stick to a galley. The work composed may be straight composition, tabular matter or display work, or a combination of the three. After a galley is made up a proof is taken and after making the changes indicated in the corrected proof, the compositor proceeds with the process of imposition. The galleys of composing type are divided into page lengths, cuts are inserted and the work is tied together with a strong cord. Proofs are then taken and corrections made, after which the pages of type are placed on a wooden or stone topped table. The type is levelled with a mallet, and the properly spaced is locked in a chase. When so locked, the form is ready for the pressman, or, in newspaper shops, for the stereotypist. The completion of these processes concludes the work of the hand compositor.

In linotype composing, the operator strikes a key, which releases a matrix or mould of a letter. The matrix falls into a tray and when a line is complete, molten metal is automatically forced against it, and a solid line of type thus formed. Speed and accuracy are essential in ordinary machine composing, and in newspaper work speed is one of the prerequisites of the job. Lino-

operators in Richmond must also be able to adjust their machines and keep them in good repair, as no linotype machinists are employed except in the newspaper shops.

Both hand and machine compositors in Richmond are required, in addition to composing, to do proof reading, makeup and imposition, and the work of the stone man. For a complete description of all these phases of work, see pages 106 to 113 of the Richmond, Virginia, Survey Report.

*Special knowledge and skill required.*—See Richmond, Virginia, Survey Report.

*How special knowledge and skill are obtained.*—Part of the knowledge and skill required of the compositor are obtained during the period of apprenticeship, and through the correspondence course required of apprentices. Special school courses in English, design, punctuation, and proof reading are essential to develop the proficiency now required in the trade.

*Mental and physical requirements.*—Good eyesight, memory, manual dexterity and steady nerves are required.

*General education required.*—A complete elementary school education is essential before entering the printing trades.

*Promotion.*—The hand compositor may be promoted to machine composition, and to composing room foreman.

*Wages.*—The union scale is as follows: Newspaper compositors, hand, nineteen dollars weekly; machine, twenty dollars weekly; job shop compositors, hand, seventeen dollars; machine, eighteen dollars; machinists and operators, twenty dollars.

### **The Apprentice Compositor**

*Number.*—There are six composing apprentices in Richmond. According to the union regulations, there may be one apprentice to each eight journeymen, with proportional increases. No one can become an apprentice before the age of sixteen, and the term of apprenticeship is five years.

*What the worker does.*—During the first two years, the apprentice works in the composing room doing general work, oftentimes as a roustabout. In his third year the apprentice joins the union, which stipulates that he be employed four hours a day at composition and distribution. During the two following years a



longer period of time each day must be spent in composing. A linotype machine may be used during the last year. In the last year of the apprenticeship the apprentice is required to pursue a correspondence course, outlined by the International Typographical Union. The course costs thirty dollars. Upon completing the course the local union refunds to the apprentice twenty dollars, and the employing company five dollars.

*Apprentice requirements.*—The desired requirements for an apprentice, as set forth in the 1913 report of the United Typothetae and Franklin Clubs, a national association of proofreaders of printing establishments, were as follows:

1. An earnest desire to become a printer.
2. Good morals.
3. At least a grammar school education.
4. Mental alertness.
5. Sober, industrious, thrifty parents.
6. Good health—absence of physical deficiencies.
7. Age, approximately fifteen years.
8. Full average height.
9. Not a cigarette smoker.
10. Tidy in appearance.

### **The Head Pressman and Foreman**

*What the worker does.*—The head pressman usually "reads" the forms, adjusts presses, registers, ink feeds, and directs the work of other pressmen and press feeders. In the printing establishment the foreman cuts all paper stock. He often must purchase inks and paper stock, and mix inks to obtain the desired consistency and color. Each kind of paper used requires special press adjustments and ink mixtures, and the foreman is responsible for these phases of the work.

*Special knowledge required.*—The pressman must be familiar with presses, papers and inks of all types. A knowledge of the raw material and processes used in paper making, and the ingredients of inks, and the types of inks required for each kind of paper is necessary. He must know stock sizes of paper and be able to cut paper so as to have the least waste. An all around knowledge of the printing business and the ability to fill any position in the shop is required.

*Special skill required.*—The foreman must be able to make ready forms, to adjust feeding devices, to adjust register and all mechanical parts of the press, to mix inks, to keep color uniform and avoid imperfect sheets.

*How special knowledge and skill are obtained.*—The basic elements of knowledge and skill are obtained by working as a pressman, and prior to that, by a period of apprenticeship. By these experiences, technical skills are developed, but school courses in the chemistry of inks, color harmony, and paper making are essential in developing the highest skill in a foremanship position.

*Promotion.*—Promotion above the foremanship is rare. Many foremen become proprietors of shops of their own.

*Wages.*—Weekly wages range from twenty-two to twenty-five dollars.

### The Pressman: Cylinder, Platen and Web Press

For a detailed analysis of the work of pressmen and press feeders see the Richmond, Virginia, Survey Report, pages 112 to 117.

*What the cylinder pressman does.*—There are two types of cylinder presses: Those with a flat bed carrying the form passing back and forth beneath a revolving cylinder, and those where the paper passes between two revolving cylinders. The latter type press is usually termed "the web press," and the pressman, the "web pressman," while the pressman of the former press is usually termed the "cylinder pressman."

The duties of a cylinder pressman consist in putting the form on the press, "dressing" the press for the job and "spotting up" a proof with thin tissue paper to even up the impression. When there are half-tones in the job, he must "underlay" or "overlay" cuts, cut out the light spots and build up the dark spots so that the proper details will appear in the finished job.

The job pressman has practically the same work to perform as the cylinder pressman only on a much smaller scale. It is not often that he is required to do half-tone work as the smaller job presses are not adapted to this class of work.

The pressman also sees that the printing keeps a proper margin, or "registers" as it is called. Either he or the head pressman

selects the ink and regulates the supply. He must care for his press. This, in itself, is an important part of his work.

*What the platen pressman does.*—In the platen press, the type and the impression surface are both flat, the print being made by bringing them together. Sheets are usually fed by hand. Presses are operated by foot or electric power. In the large shops, the platen pressman adjusts the form, register, and ink supply and the feeder operates the press.

Where press feeders are not employed, the pressman is also the feeder.

*What the web pressman does.*—The web press is a complicated cylinder newspaper press. The pressman, in Richmond, Virginia, locks up the forms on the cylinders, "dress up the press", adjust registers, regulate ink supply, roll pressure, and in short, make all the adjustments to press, forms and paper necessary in printing the newspaper. The web pressman is a mechanic of a high order, entrusted with the care of a machine composed of many thousands of parts and costing many thousands of dollars.

*Special knowledge required.*—All good pressmen in Richmond may be called upon to operate cylinder or platen presses. They therefore, must possess the technical knowledge relative to preparing the machine for the job, mixing inks and adjusting feeds for various papers. A knowledge of the chemistry of ink and paper making is essential.

*Special skill required.*—Special skill involves the ability to make ready forms for all presses, to mix inks, to keep color uniform, make all mechanical press adjustments, and to keep the press well cleaned and oiled.

*How special knowledge and skill are obtained.*—The rudimentary aspects of the special knowledge and skill required are obtained during the apprentice period, and after this, by continual practice on the job, but the introduction of the newer types of presses makes specific vocational instruction essential to meet modern requirements.

*General education required.*—An elementary school education is necessary.

*Promotion.*—Promotion beyond the pressman is very unusual.

*Wages.*—The union scale of wages is as follows: Cylinder pressman, eighteen dollars weekly; platen pressman, fourteen dollars weekly; web pressman, eighteen to twenty-five dollars weekly.

### **The Apprentice Pressman**

*What the worker does.*—The apprentice pressman follows no special scheme of work mapped out for his apprenticeship. He usually begins as a platen press feeder, and advances to platen pressman; or, he may start as cylinder press feeder and advance to cylinder pressman.

The term of apprenticeship is four years, but obtaining a pressman's job with journeyman's wages depends upon the apprentice's ability and the opportunities open in the shop.

*Wages.*—The beginning wage is usually six dollars, although some feeders receive less than this sum.

### **The Press Feeder: Cylinder and Platen**

*What the cylinder press feeder does.*—The cylinder press feeder stands on a platform at the side of the press and feeds the paper to the guides. The knack of feeding a cylinder press consists in "combing" the stock down so that it is easy to get hold of; lifting the sheet with a slight jerk so that air gets under it and practically carries it to the bottom guide; and then sliding it over to the side guide. The cylinder carries the sheets through the press and then stacks them in neat piles. The feeder also helps clean the machine.

*What the platen press feeder does.*—The platen press feeder places a pile of paper stock on the feeding tray and feeds and removes a single sheet of stock with each revolution of the driving wheel. He places the sheet against the guide when the platen is at an almost level position, removes the printed sheet just as the press opens, and then inserts another. The expert feeder keeps up this rythmical process without a break until the job is completed.

*Promotion.*—Press feeders, if males, may be promoted to pressman, but, if females, no promotion is possible.

*Wages.*—Cylinder press feeders receive twelve dollars weekly, and platen press feeders receive nine dollars weekly.

### The Cutting Machine Operator

*What the worker does.*—The cutter cuts sheets and bundle paper stock and cardboard and trims booklets, etc., to the required size, by either a hand or power cutting machine. In some shops in Richmond, cutting is done by the press room foreman and one of the pressmen who may be idle at the time.

*Special knowledge required.*—The cutter must know grades and qualities of paper stock and cardboard, and trade designations of paper stock. He must be able to determine the size of sheet to select from which to cut stock, which will involve the least possible waste, and he must be able to count out small lots of stock. He must also understand the measuring scale of the cutting machine and the technique of operating the machine.

*Special skill required.*—The skill relates to dexterous and accurate machine operating. Stock may be cut on the power overcutting and undercutting machines, or on table and bench shears. In operating essentials, the various makes of overcutting and undercutting machine paper cutters are similar. Granted that the operator has completed all computations, selected stock and knows where cuts are to be made, the following are the essential operating steps. The back gauge must be set. The line, which the gauge is set is determined in one of the following ways depending upon the type of cutter; by the graduated hand rule, graduated table, or graduated steel band with finger or dial indicator. The back gauge is usually controlled by a hand wheel.

After the gauge is set, the paper stock is placed on the cutting table and clamped in place. Cutting is accomplished by a sharp knife controlled by a foot or hand lever, with either electric or manual power.

The essential features in successfully operating table and bench shears are setting gauges, clamping stock and operating the hand shear blade.

*How special knowledge and skill are obtained.*—The necessary knowledge and skill may be obtained by practice on the job, provided the cutter has sufficient education to enable him to make necessary computations.

### The Bindery Operator

*What the worker does.*—Pamphlet binding in Richmond is usually done exclusively by women. The work involves folding, gathering, stitching, cover pasting or wire stitching.

In Richmond, two highly skilled bookbinders are employed. Each of these workers is highly skilled in all phases of the craft, which in a large, highly specialized bindery includes the occupations of trimming, rounding, backing, casing in and finishing. For an accurate analysis of all bindery processes, see Richmond, Virginia, Survey Report, pages 137 to 139.

### **SURVEY COMMITTEE RECOMMENDATIONS**

The future of the printing trades of Richmond depends largely upon the proper training of young workers and apprentices. According to the present trade agreements, apprentice compositors are supposed to pursue and complete the correspondence course outlined by the International Typographical Union, and also to receive instruction from foremen. As a matter of fact, the correspondence course, although of good quality, is not pursued with much enthusiasm or profit by the compositors' apprentices, owing to the difficulty of one's retaining interest and enthusiasm in the study at hand without a teacher.

The Survey Committee recommends that the Richmond Board of Education establish an evening course for printers' apprentices and helpers. It also urges the pressmen's and compositor's trade unions and the employing printers of Richmond to render wholehearted support to the plan and insist that all apprentices attend for the minimum time agreed upon by all concerned. This course should be taught on a trade extension basis and should include these units agreed upon by the representatives of the school, the unions and the employers. An advisory committee representing these three interested parties should be formed to assist in initiating this work and keeping it on a high plane of trade efficiency.

For the boys who desire to partially prepare for the trade before entering it, a vocational trade preparatory course should be provided in the Senior High School. This course should be on a strict trade basis and about one-half the time of each pupil each day should be spent in the shop and the other half in the study of related subjects. The duration and content of such a course should be determined by the advisory committee.

The printing course recommended for the Junior High School is regarded as a finding course for boys who may be interested in determining whether or not they are adapted to the work, and for others who might pursue the work on account of their interest in the field. This course should be taught according to the best standards of the trade, but not on a trade preparatory basis.



## CHAPTER XI

---

### INDUSTRIAL EMPLOYMENT: BUILDING CONSTRUCTION

*Erecting a modern building.*—The usual procedure in the construction of a building of much importance is as follows: The owner, after having decided on the location, size and approximate cost of the building, engages an architect to make sketches, draw plans and furnish specifications. The owner then asks for bids from general contractors according to the plans and specifications chosen. The lowest bidder is usually awarded the contract which he may, and often does, sublet in part to heaters, plumbers, painters, and others. The tendency in bidding, however, is for the owner or architect to receive bids directly from general contractors, plumbing contractors, and painting contractors for the construction of the respective parts of the building.

The supervision of the construction of the building usually rests with the architect or his representative. The building superintendent sees that all materials and construction details are as specified. He represents the owner but has nothing to do with the work of actual construction, nor with the supervision of the workmen on the job.

In Richmond, many houses, barns, outhouses and garages are planned and erected without the services of an architect. In such cases the contractor may furnish plans and specifications at the suggestion of the owner, or the owner may directly inform carpenters, plumbers and painters of the work to be done and also supervise the work at all stages.

*Types of structures.*—In Richmond, as in most American cities, there are buildings of all types of design, constructed from various building materials. The first structures in Richmond were built from logs, rudely hewn and dovetailed together at the four corners, the cracks being filled with clay. At an early date, however, brick became a common building material. Now homes are built from wood, stone or brick, or a combination of these materials,





upon a stone, brick or concrete foundation. The newer stores, banks and office buildings are constructed principally from steel, stone and concrete.

In a city as old as Richmond the remodeling of homes, stores and office buildings constitutes a considerable portion of the building activities of the city.



A Modern Building, of Which This Richmond School is an Example, Requires Workers from a Great Variety of the Building and Allied Trades.

### Occupations and Number Employed

	Males
Contractors.....	25
Carpenters.....	85 to 125
Bricklayers.....	15
Electric wiremen.....	25
Hoisting engineers (part time).....	3
Lathers.....	20
Painters and decorators.....	60
Plasterers.....	16
Plumbers and steam fitters.....	25 to 30

**Occupations and Number Employed—Continued.**

	Males
Sheet metal workers.....	12 to 20
Stone cutters and masons.....	5
Structural iron workers.....	.
Paper hangers.....	20 to 25
Laborers.....	100 to 140
Total.....	509

As the building trades are well standardized and have in recent years been carefully analyzed, no actual field research work was done in preparation for this section of the Survey Report. Members of the Survey Staff held thirty-five interviews and conferences with workers, contractors and committees representing the Union employers, and teachers in the industrial department of the high school. The occupational analyses of the building trades reported in the two following Surveys adequately describe the situation in the building trades of Richmond:

Report of the Vocational Education Survey of Richmond, Virginia  
Bulletin Number 162 United States Bureau of Labor Statistics.  
The Cleveland Survey of Building Trades. Russell Sage Foundation  
New York City, N. Y.

**Facts Common to All Workers**

*Seasonableness.*—Of all occupations followed in Richmond there are none in which there is a greater amount of irregularity of work and seasonal work than in the building trades. This is not peculiar to Richmond but is universal, to a greater or less extent, throughout the United States. Moreover, even during the normal and busy seasons the workers in the building trades are likely to lose considerable time between jobs.

There is little work in any of the building trades in Richmond during January, February and March. A second "off season" comes in July and August. During these slack seasons the workers usually secure employment in some of the local factories. In fact many of the men in the building trades in Richmond are employed regularly for a part of each successive year in the local plants as erectors of agricultural implements, painters and stainer cabinet makers, assemblers and wood finishers. Thus, those who

follow the building trades must have at least one other trade or occupation which they may follow during the long dull season periods.

*Mental and physical requirements of workers.*—To successfully follow any of the building trades, a man of strong physique, capable of heavy lifting and long hours of hard work, and able to endure exposure to all kinds of weather, is required. Average mental ability and at least a complete elementary eighth grade education is also necessary. For a fuller discussion of mental and physical requirements of building trades workers, see the Richmond, Virginia, Survey for Vocational Education.

*How trades are learned.*—At present there is no well defined system of apprenticeship in Richmond in any of the building trades. A number of the workmen state that they first “took up” the trade in rather an incidental way, perhaps in doing some work on their own premises, or for a neighbor, and after working on a few such jobs were hired by a contractor. When they had “picked up” some information concerning the trade they were recognized as journeymen workers. At present there are no young helpers under twenty-one years of age in any of the building trades of Richmond. The training of new workers for the trades in Richmond is one of vital importance, but of great difficulty owing to the long dull season, and the additional fact that there is a growing tendency in Richmond to award contracts for important structures to contractors from neighboring cities such as Dayton and Cincinnati. The “out of town” contractors usually bring their own workmen with them.

### **The Contractor**

*What the worker does.*—The contractor must be a man of business ability with capital of his own or a reputation that will enable him to secure the necessary credit for the purchase of materials. He must possess detailed knowledge of building construction and material, and where, how and when to purchase materials. Above all he must be a close estimator on material and labor. Failure to finish a job in the time allotted often means forfeiting part of the profits. Quoting from a recent writer, “A man may know all there is to know about the theory of building, he may be an expert manager of men, but if he cannot figure probable costs he cannot hope to succeed. The open doors of

bankruptcy await the incompetent estimator." In Richmond many contractors were formerly journeymen carpenters, plumbers or painters. The contractor should be able to draw floor plans, construction details and prepare specifications. He should be able to intelligently read and understand catalog descriptions of new materials, text books on heating, ventilating and plumbing, building ordinances, and other printed helps, if he is to successfully meet the competition which is continually becoming keener.

### The Carpenter

*The local situation.*—The trade of the carpenter is the most important in the building industry. In Richmond the carpenter's work is not specialized. He is supposed to be an "all round workman, though reports received by the Survey show that many in the trade lack the ability to do regular journeyman's work according to present standards.

*What the worker does.*—The work of the Richmond carpenter involves laying out a building from blue prints and specifications; constructing all frame work including sills, studs and posts; building scaffolds, applying weather board, shingle and lath; erecting the foundation, frame and roof; laying floors, building simple stairways, and building and setting door and window frames; hanging doors, windows and blinds, and finally putting the inside and outside finish.

*Special knowledge required.*—As the carpenter prepares to build for much of the work done by painters, finishers and plumbers, he should have a general knowledge of all building trades. The carpenter, in laying out his work, must be able to read plans and specifications and needs at least a complete eighth grade elementary education. He should know how to use a spirit square in laying out work, especially various kinds of rafters. A knowledge of the hand and machine tools of the trade, of various kinds of woods used and the different methods of building construction is necessary. He needs, furthermore, a knowledge of mechanical drawing, the ability to read architect's plans, blue prints and specifications, and a knowledge of plane and solid geometry.

While the trade affords the opportunity to acquire skill in the use of tools, it does not enable a worker to obtain the technical knowledge which is necessary for the better tradesman for promotion to foremanship.

*Special skill required.*—The carpenter must be able to use saws, chisels, planes, braces and bits, and other tools of the trade and keep them in good condition.

“The skill of the carpenter may be said to increase as he adds to the number of tools in his kit. If his job is to build forms for concrete construction, he will need only a hammer, saw and rule; if he is engaged in putting on interior trim he may need a whole chest of tools. The more tools he can use, the more likely is he to become an independent worker.”

*What the worker lacks.*—Lack of the general “all round” knowledge of the trade and of initiative ability are reported as common deficiencies of carpenters. Good foremen are said to be hard to secure.

*Wages.*—Reports show that journeymen carpenters receive forty cents per hour for a nine hour day.

### **The Bricklayer**

*What the worker does.*—The bricklayer in Richmond is expected to do any kind of bricklaying required in the construction of buildings, foundations, sewers, factory chimneys and boiler foundations. He must also be able to do such stone setting as may be easily handled. As the major portion of his work consists of building walls, it is very necessary that he have the knowledge of the various methods of bonding. He must be proficient also in the building of corners, chimney flues, the building in of window and door frames, building arches and gables, and in doing trimming and ornamental work. It is notable that in Richmond there is no specialization whatever in bricklaying.

*Special knowledge required.*—The bricklayer must thoroughly understand bonding, the practice of “tying” a wall together, or otherwise strengthening it, by laying header bricks with ends toward the outside of the wall. He should have a workable knowledge regarding the kind and composition of brick and mortar. It is necessary also that he be able to read and work from blueprints and specifications.

*Special skill required.*—The bricklayer must be skilful in the use of the trowel, chisel, hammer, plumb-rule, level line, pins, etc., in the erection of straight walls, window frames, arches and gables.

*How special knowledge and skill are obtained.*—The special skill required of the workman can be gained while working a trade, but there is little opportunity of acquiring the special knowledge while working on the job. The special knowledge should be gained before entering the trade, or by evening study and learning the trade.

*What the worker lacks.*—The Richmond bricklayers are regarded as skilful in their technical work of bricklaying. Deficiencies concern the reading of architects' plans and specifications, mathematics of the trade and general education.

*Hazards and inherent character of work.*—The work of the bricklayer is more hazardous than many of the building trades but so than structural iron work or outside electric wiring. The trade involves no great physical exertion, but since the worker is exposed to the weather most of the time, his general health should be good.

*Wages.*—The bricklayer is paid sixty-five cents per hour and works eight hours per day.

### **The Electric Wireman**

*What the worker does.*—The interior wireman installs wiring within buildings for all types of fixtures and appliances. They include outlet boxes, fuse boxes, wall switches and lighting, heating, bell and elevator fixtures, and such appliances as vacuum cleaners, signals, register boxes for watchmen, and electric stoves. The work involves boring holes through walls, joists and studs; putting in tubes; bending, cutting and installing conduit pipe and placing knobs. In general, the work of the Richmond electric wiremen includes the four types of wiring described in the Richmond, Virginia, Survey: (1) Open work, where wires are mounted on cleats and exposed to view; (2) molding work, where wires are run in special molding; (3) concealed work, where wires are run through knobs and tubes in partitions and walls; and (4) conduit work, where wires are run through composition or metal pipes.

*Special knowledge required.*—In Richmond the wiremen must possess the same special knowledge indicated as required by the wiremen in Cleveland, and reported in the Building Trades section of the Cleveland Survey. He should be well informed concerning city ordinances, state laws, and underwriter's rules governing

electrical work. He should also be able to read plans, specifications and blue prints so as to find locations for various kinds of tubes. He needs a knowledge of the theory of electricity to understand conductors, insulators, circuits, currents and connections.

*Special skill required.*—The manipulative skill needed is not of a high order. The electric wireman must be dexterous in using the tools of his trade, including pliers, screw drivers, braces and bits, hammers and soldering tools.

### **The Hoisting Engineer**

There are only three hoisting engineers in Richmond and these men are employed at this occupation only part of the time.

### **The Lather**

*What the worker does.*—In Richmond the work of the lather is sometimes done by the carpenter. This practice is current on small jobs where few men are employed. The practice of the carpenter doing the work of the lather is gradually decreasing.

The lather applies both wood and metal lath. In applying wood lath, he fills his mouth with nails, places the lath in position, using both hands, removes a nail from his mouth, and hammers it into place with a lathing hatchet.

Metal lath may be fastened with special wire fastenings, but is ordinarily nailed to the surface in much the same manner as wood lath.

*Special knowledge required.*—The special knowledge required is extremely limited, but if the worker hopes to become a foreman he needs to know how to figure yardage, measure work and read plans, in addition to figuring labor costs and cost of materials.

*Special skill required.*—It does not take long to acquire the skill needed. It is gained by practice. Speed is the prime essential.

*Wages.*—The lather receives a wage varying from thirty-five to fifty cents per hour and works nine hours per day.

### **The Painter and Decorator**

*What the worker does.*—In Richmond, the painter is required to work on both outside and inside jobs. In addition to the work of



painting, many journeymen do staining, stenciling, graining, varnishing and paper hanging.

In repainting or refinishing old work, the painter removes the old finish by using the gasoline torch, scraper and sandpaper; and in some cases, a varnish solvent. With new work the surface must be properly smoothed with sandpaper after which the priming coat of paint is applied. All cracks and holes are then filled with putty and two or more coats of color are then applied.

In staining the painter may apply a solution of dyes to take out the color in the wood, or show the grain, or he may expose the surface to ammonia fumes, or coat the surface with ammonia, the result being a nut brown color. In filling wood surface, putty or paraffine is used, either a liquid or paste filler may be used.

The work of the painter may also involve graining. After two coats of color have been applied, a coat of graining mixture of the color of the wood desired to be represented, is applied. The grain imitation is obtained by first drawing a coarse comb and then a fine comb over the surface, after which the figure effect is obtained with the thumb or piece of cloth.

*Special knowledge required.*—The house painter should have thorough knowledge of mixing paint and of color harmony. He should not only be skilful in the use of his brushes, but should understand how to care for them. The ability to construct scaffolds and "swing" rigging as well as the ability to climb well and work from ladders without becoming dizzy is required. He should also have a knowledge of the composition of paints, oils, varnishes, fillers, how to test them and when to use each to the best advantage.

The painter should be able to estimate a job as to cost of material and labor. He should understand the diseases and dangers of the trade in order that he may take every precaution to avoid them.

*Special skill required.*—Manipulative skill varies with the type of work. For body coats little skill with the brush is needed; for striping, lettering and applying finishing coats a high degree of skill is necessary.

*What the worker lacks.*—The reports received by the Survey show that many of the journeymen are deficient in knowledge of the trade in all branches.

*Hazards and inherent character of work.*—The greatest hazards of the trade are from “lead poisoning” and falling from scaffolds and ladders.

*Wages.*—The painter receives wages of thirty-seven and one-half cents per hour, and works nine hours per day.

### **The Plasterer**

*What the worker does.*—The plasterer places palster on walls, ceilings and other surfaces, and does ornamental work on cornices, moldings, etc. On flat surfaces three coats are usually laid. The first coat composed of plaster containing hair is put on, well “scratched” and smoothed. When the first coat is dry, the second is put on and “floated.” This coat contains no hair. The third coat, which is a finish coat, consists of lime and plaster of Paris. This is put on very thin and the surface smoothly finished. In cornices, molding, and other ornamental work, the plasterer usually “runs” his material in place. Plaster for such work is made of lime and plaster of Paris, stucco or similar material.

In the work of plastering the plasterer uses a hawk, a small square board with a handle in the center of the lower side used to hold mortar; a scratcher, a tool made of sharpened wooden slats nailed on two strips; and a float, a straight piece of wood a foot long with a curved handle used to level a mortared surface. He also uses trowels, brushes, paddles, molds, rods and other tools of the trade.

*Special knowledge required.*—The work requires considerable skill and an ordinary degree of intelligence, except ornamental work, where considerable technical knowledge is required. The reading of plans and specifications, drafting patterns and making templates is required of all first class plasterers.

*Special skill required.*—Manipulative skill, in the main, in the use of the tools of the trade is necessary.

*What the worker lacks.*—The common deficiency is a lack of general education.

*Wages.*—Reports show that the plasterers receive fifty-five cents per hour for eight hours per day.

### The Plumber and Steam Fitter

*What the worker does.*—The plumber installs waste, w sewer and gas pipes, and sets in place wash bowls, bath toilets and all toilet auxiliaries.

*Special knowledge required.*—The plumber must know ho cut and thread pipe to make the different joints, and espec must know how to wipe a joint. He must be able to bend pipe without breaking it or doing it other injury. It is neces that the plumber understand considerable of building const tion as he must install plumbing systems in the various type buildings. The ability to use the "water test" for joint test and also a knowledge of siphons, traps, vents and pumps, as as the building codes of the city are required.

If the plumber expects to advance far in the trade he sho have a knowledge of physics and such chemistry as can be app to the trade. It is also necessary that he should be able to i working drawings and be able to lay out complete plumbing drainage systems.

*Special skill required.*—The small range of manipulative s required is neither wide nor difficult to obtain as the tools w which he works are comparatively few in number and sim to operate. Among the tools are the shave hook, the ladle, borers, joint runners, wrenches, chisels, braces and bits and p threaders. It is often said that the test of plumber's mehani ability is his "joint wiping."

*What the worker lacks.*—The common deficiency is the lack the scientific knowledge of the trade which prevents workers fr meeting a new situation intelligently. The plumber should he at least a complete elementary school and preparatory tra vocational education, if he expects to advance in his trade.

*Hazards and inherent character of work.*—Although the occup tion has not been considered unhealthy, there are dangers fro gases, wastes and dampness. Especially is this true of rep jobs.

*Wages.*—The wages paid are thirty-five to forty-five cents p hour for nine hours per day. The "house" receives sixty cen per hour for the services of the plumber.

### **The Sheet Metal Worker**

*What the worker does.*—The sheet metal worker in the building trades makes and erects water spouts, gutters, sky-lights, fire doors, gates and metal sash. In Richmond he also installs hot air furnaces and hot and cold air pipes.

*Special knowledge required.*—The sheet metal worker must be able to draft and to construct pipes and tanks of various sizes and shapes. He must be able to read blue prints. In the making of an intricate joint, as is pointed out in Cleveland Education Survey of the Building Trade, rule of thumb methods cannot be followed successfully.

*Special skill required.*—The work involves the use of light pieces of metal and the worker needs to be dexterous in handling his materials. Manipulative work includes the use of forming, punching, cutting, riveting and soldering tools. The ability to draft the pattern and lay out the work prior to cutting and forming is of prime importance.

*What the worker lacks.*—Perhaps the most common deficiency of the sheet metal worker is his inability to read blue prints and specifications, draft patterns and estimate capacity for heating and ventilating systems.

*Wages.*—The wages received are forty cents per hour for nine hours per day.

### **The Structural Iron Worker**

There are no structural iron workers employed in the building trades of Richmond. Workers from neighboring cities are employed when needed.

For a detailed description of the structural iron worker, see the Report on the Building Trades of the Cleveland Survey.

### **The Stone Cutter and Mason**

It is reported that there has been a steady decrease in the number of stone cutters and masons during the last decade. This decrease is due to the growing use of concrete, steel and terra cotta. It is noted from the table of occupations in the building trades that but five of the five hundred workers are stone masons. The Richmond, Virginia, Vocational Education Report contains

- a description of work of the stone cutter and mason, which correctly describes the work in these fields in Richmond.

### **The Paper Hanger**

*What the worker does.*—The analysis of the work of the paper hanger reported in the Richmond, Virginia, Survey, adequately describes the trade in Richmond. The essential points are here reproduced.

The work of the paper hanger consists of papering and repapering. In papering new surfaces, the paper hanger first applies a coat of the glue sizing. If the walls have been previously papered, the old paper must be removed, cracks and depressions filled with plaster, after which the wall is sized. The new paper is trimmed and cut with a hand or machine knife, is made ready for pasting. The paper hanger first applies the paste to the paper, folds the paper and allows it to soak to prevent blistering before hanging it. He then hangs it on the wall, pressing it down with a brush, working from the top of the wall downwards.

*Special knowledge required.*—The paper hanger must possess a thorough knowledge of glue and paste mixing, and the kind to use for each kind of wall. He must possess the necessary taste to lay out panel work, and to match figured paper. A knowledge of the fundamentals of space breaking as applied to border widths, panels and molding lines is also essential.

*Special skill required.*—Dexterity in manipulating paper, in addition to the proper handling of brushes, rollers, knives, and scissors are essential to the paper hanger.

*What the worker lacks.*—The most striking deficiency of the paper hanger is lack of knowledge of color harmony and principles of applied design in space breaking.

### **The Laborers**

The building trades laborers include hod carriers, cement laborers, lumber yard men, teamster's helpers, and carpenters' helpers. For a full description of the work of the building trades laborers see the report of the Richmond, Virginia, Survey.

### **SURVEY COMMITTEE RECOMMENDATIONS**

For all of the building trades occupations day preparatory vocational education is possible. It is doubtful, however, if the field in Richmond is broad enough to justify the maintenance of such courses on an all day trade preparatory basis.

If there are, however, a sufficient number of boys desiring day courses in preparation for any of the building trades, the Committee recommends that such day courses be established and taught on a strictly trade preparatory basis. If there were young helpers or apprentices in any of the building trades, the Survey Committee would recommend that during the dull seasons, helpers and apprentices be required to attend day vocational courses. There are no such young helpers or apprentices in Richmond.

For the men already in the building trades, the Richmond evening school can be of real service.

For contractors, evening courses should include a study of types of buildings, estimating materials needed, plan reading, study of building construction and making of contracts and building specifications.

For carpenters, evening courses should include laying out of stairs and roofs, plan and specification reading and architectural drawing.

There are probably not enough bricklayers, hoisting engineers, sheet metal workers or stone masons to justify evening courses. If, however, a group of sufficient number from any of these trades could be formed, evening instruction on a trade basis should be provided.

It is concluded that no evening courses are necessary for electric wiremen, lathers, painters and plasterers in the building trades.

Evening classes for plumbers might profitably be offered. Such courses should include plan reading and estimating, building construction, as affecting plumbing, erection of fixtures, principles of physics and chemistry underlying operation of plumbing systems and state laws concerning the practice of the trade and building erection.

In every case where any of the above outlined evening courses are offered, they should be taught by a tradesman and supervised by an advisory committee from the trade.



## CHAPTER XII

---

### INDUSTRIAL EMPLOYMENT: UNDERWEAR, GLOVE AND WORKINGMEN'S WEAR MANUFACTURING

The underwear, glove and workingmen's wear industries have been grouped together because of the similarities of shop organization and product, the large number of facts common to workers in each industry and the large number of closely comparable occupations.

The three industries in Richmond give employment to 583 workers, 85 per cent. being women, one-half of which are power sewing machine operators. Of the total number employed in these industries, 43 per cent. make knit underwear; 48 per cent. gloves; and 9 per cent. workingmen's wear. The glove industry gives employment to a considerable number of working permit boys and girls as formers, turners and packers.

#### **The Underwear Industry**

Although the underwear industry is not limited to any one section of the country the most important centers are New York with 35,950 workers and Pennsylvania with 38,206. In Indiana, in 1910, there were 4,945 textile workers, 1,933 of which were employed in the five hosiery and underwear factories. The Richmond underwear factory employing 215 female and 34 male workers developed since 1910.

*Product and characteristics.*—All kinds of knit underwear are made for the wholesale and jobbing trade. There is a branch factory in Cambridge City. One inherent characteristic of the industry is the presence in all parts of the factory of free floating lint from the wool and cotton spools and web.

*Factory organization.*—The three major divisions of the factory are office, factory proper and shipping department. One superintendent oversees the foreman of the spooling, knitting, marking and sorting departments; another oversees the foreman of the



sewing and finishing departments. Machinists, and their assistants who set up, adjust and repair machines and the yard men and truckers who transfer stock from one department to another, work in these departments when their services are needed.

*How the order is filled.*—Orders are made out in triplicate in the office. One copy goes to the foreman of the knitting department, who in turn makes out the orders showing the amount and kind of yarn to be spooled by each "spooler," and the kind of yarn to be used on each knitting machine. One copy goes to the cutting department foreman who issues orders showing the number of each style of garment to be cut. The third copy is retained by the shipping clerk, in order that he may check the consignment as it is packed for shipment.

*How the garment is made.*—The raw material used is spool yarn, which is first rewound to discover and remove imperfections. The yarn is then knitted into tubing on circular spring needle machines. Washing and dyeing are done outside of the factory. When fleeced garments are to be made, the fleecing process is next in order. The demand for fleeced garments, however, is steadily decreasing. The woven fabric is next marked and cut, all pieces belonging to two dozen garments of a given size and kind being bundled together. The cut parts are taken to the sewing room for the eight different operations: Cuff and ankle sewing, seaming, cover seaming, collar sewing, facing, crocheting, buttonholing and button sewing. The garment then goes to the finishing department where it is inspected for defects and pressed, measured and folded. In the shipping department, each garment is placed in a box of the style and color designated by the buyer. These boxes are labeled, packed for shipment and consigned to jobbers.

### The Glove Industry

Of the 67 garment factories of Indiana enumerated by the United States Bureau and Labor Statistics in Bulletin Number 160, 18 manufacture workingmen's gloves and give employment to 1,473 women being about one-fourth of all engaged in the garment industries of the state.

There are two glove factories in Richmond, one being a branch of an Indianapolis concern. These factories employ 279 workers, 80 per cent. of whom are women, the large majority, sewing machine operators. One-half of the men employed are cutters. The glove industry gives employment to a considerable number of working permit boys and girls in the finishing departments.



Power Sewing Machine Operating in a Glove Factory.

*Product and characteristics.*—The gloves manufactured made from heavy outing flannel. They may be plain, with or without leather lining, and with or without the knit wrist cuff or gauntlet cuff. In the cloth cutting and sewing department there is a great deal of lint floating in the air. The leather used facing is split kip from the skin of a half-grown cow. Inferior leather from the quarters, may also be used. Sheepskin and skin are occasionally used.

*How the order is filled.*—Manufacturing orders are made out in duplicate in the office. One is sent to the foreman of the cutting department indicating the number of each style of glove to be cut. Another copy is sent to the shipping clerk from which he checks the consignment as it is packed for shipment.

*How the gloves are made.*—The glove parts are cut from the material. There are two divisions of the cutting department, one where the leather palms and tips are cut, and one where the cloth is cut. In both departments both dies and presses are used. The cutting unit is three dozen of each part. From the cutting department the stock is taken to the sewing department where the gloves are made. In the finishing department the sewed gloves are turned right side out, and the seams are pressed by a method called "forming." They are inspected for defects and packed in pasteboard boxes holding a dozen pair each.

*Promotion for girls.*—New workers may enter either the sewing or finishing departments. Girls under sixteen enter the finishing department as formers of canvas gloves or as turners. They may be promoted to packers. When a girl becomes sixteen she may be promoted to inspecting and from that to head of the department or she may be transferred to the sewing department. A worker entering the sewing department may be promoted to the position of assistant forewoman and from there to forewoman, but, since there are in all only two forewomen and two assistants to 184 operators, such advancement is rare. Because wages are on a piece work basis efficiency brings increased earnings. Some of the operators make almost as much as the forewoman. There is some difference in the skill required between different operations. Leather sewing demands greater skill than cloth sewing; closing is more difficult than sewing thumbs; yet piece rates are so placed that the more skilled work gives no more opportunity for greater earnings than the less skilled.

*Promotion for boys.*—Boys under 16 may enter as tip cutters, turners or formers. Tip cutters may be advanced to formers of leather gloves; and turners to formers of leather gloves or packers. From the finishing department boys of sixteen or over may be advanced to leather cutting or cloth cutting. Boys entering at sixteen may operate the power presses in the cutting department. The new worker who enters as a helper in the cloth cutting department may advance to spreader and finally to cutter. The leather cutter may be promoted to the position of foreman. Boys may be transferred to the shipping department.

### **The Workingmen's Wear Industry**

The manufacture of workingmen's wear had its inception in Richmond in 1885 with the manufacture of overalls. In 1891, the factory was enlarged and subsequently part of the plant was moved to Cambridge City. At present fifty-four workers are employed, ninety per cent. being women. The Richmond factory is typical of the twenty-two other establishments in Indiana which employ 2,371 workers.

*Product and characteristics.*—As the section heading indicates, the factories make overalls, jackets, combination overalls and jackets, work shirts, work pants and sport shirts.

*How the order is filled.*—The materials used and the factory output is kept track of as follows: The superintendent receives from the office a copy of the original order and a duplicate. The order is taken to the marker, who indicates on the back of it the length of the "spreads" and the number needed, after which he turns it over to the spreader. The spreader then gets his cloth from the stock room, where an account is kept of what is issued, then he turns over the original order to the girl who marks the labels. When she has finished preparing the labels she returns the order to the foreman. The carbon copy is given to the packer. He retains it until he has checked it with the number of bundles finished, then he turns it to the foreman thus indicating that the order is complete.

*How the garment is made.*—The pattern is first marked on a single thickness of cloth by the marker. Then this marked strip is laid on a stack of cloth varying in the number of spreads from ninety to one hundred twenty, and varying in length from ten to

thirty yards, according to the size of the order, after which the whole stack is cut at once by the cutter who uses an electric knife. A bundle girl ties together the pieces belonging to one kind and size of garment, into bundles of two dozen each. Cut parts are then taken to the sewing department where garments are made. On shirts the operations are: Hemming, facing, putting on pockets, felling, making and putting on collars, buttonholing and sewing on buttons. On jackets the operations are: Putting on pockets and cuffs, felling, putting on collars, buttonholing and button sewing. On pants the operations are: Putting in pockets, joining seams and putting on bands, finishing, hemming or cuffing, buttonholing and button sewing. After being sewed, threads are cut, garments are inspected, pressed, folded and tied one dozen in a bundle.

*Promotion.*—Among the women there are practically no opportunities for promotion except for the increased wages which result from increased output under the piece-work system. Some kinds of work are more skilled than others but shifting to the most skilled work does not mean, necessarily, increased wages. Shifting from overalls to shirts is desirable, not because of wages increase, but because of lighter materials to handle. A sewing machine operator may advance to the position of forewoman but such opportunities come but infrequently.

For the men in the cutting departments the line of promotion is from spreading to cutting and from cutting to marking. The present foreman of the factory was promoted from the position of marker.

## Occupations and Number Employed

Occupations	Underwear		Gloves		Workingmens' Wear		Total	
	Males	Females	Males	Females	Males	Females	Males	Females
Spooling foremen ..	1	1					1	1
Spooling operators .....		11						11
Knitting foremen ..	1						1	
Knitting operators ..	18						18	
Marking and cutting foremen ..	1						1	
Markers .....		21			1		1	21
Spreaders .....			1		1		2	
Knife cutters ..	6				1		7	
Leather cutting foremen .....			1				1	
Die cutters .....			27				27	
Sewing forewomen .....		1		4		1		6
Sewing operators .....		125		184		39		348
Inspectors .....		17		9		5		31
Pressers (see Chapter XIV) ....	6	13				2	6	15
Folders .....		15						15
Turners .....			7	11			7	11
Formers .....			15	12			15	12
Stock girls .....				1				1
Packers .....		12		6	1		1	18
Bundlers .....						1		1
Labelers .....						1		1
Total ..	33	216	51	227	4	49	88	492

**Facts Common to All Workers**

*Piece-work system.*—In the three industries, the methods recording the amount done by the workers in the sewing and finishing departments are very similar. The worker performing the first sewing operation receives with each lot a card with stub bearing lot number, size and a list of operations. This card is made up with as many detachable tickets as there are operations to be performed. Tickets are arranged in the order in which operations are performed, the first operation at the bottom. Each worker retains the ticket bearing the name of the operation she has performed and signs her name or number to the stub. The number of her tickets indicate the amount of work she has done and her signature on the stub indicates to the inspector for which operation on the lot she is responsible. Minor details in method may vary. In one factory, the account is kept by the stock girls who have a card for each worker; in another, each worker has a card which is punched in the proper place when she gets her stock from the stock girl.

*General education required.*—The ability to read, write and count is desirable though not essential. These abilities are required not for actual factory work but for receiving orders and reporting work done. Except for the labeler in the workingmen's wear industry and the spooler and knitter in the underwear factory orders are given verbally by foremen to operators. Knitting machine operators of foreign birth whose knowledge of spoken English is very limited, and who can not read, have made good. The executive positions of superintendent and foreman require at least an elementary, and preferably a high school education. Markers in the workingmen's wear industry, foremen of cutting and knitting departments receive orders in writing, expressed in technical terms. Foremen prefer grammar school graduates for all lines of work and would like to employ young people who have taken two years of high school work.

*Source and selection of workers.*—Although the majority of the workers live in Richmond, some from surrounding country districts seek employment in these industries. One factory prefers residents of Richmond. Machinists are imported from elsewhere because none are available here. Workers are secured by advertising in the newspapers of Richmond and the surrounding towns and in the moving picture shows. To attract and hold workers two of the factories have installed lunch rooms, and one has added

a recreation room and library. To stimulate regularity in attendance and good work one factory has perfected a Christmas Club organization by which every worker on the pay roll from March first to December fifteenth, receives \$12.75. This company offers prizes totalling \$600 for perfect work and regular attendance.

New workers are usually employed by department foremen. Identifying information including name, age and residence, may be received orally or reported on a special blank. Applicants are estimated on the basis of age, experience, appearance and general intelligence. Previous experience in sewing is an asset for girls who apply for sewing or marking positions. Experience in operating a power machine is particularly valuable. Older applicants, unless age is offset by experience, are not employed because they are too slow and too hard to teach, "know too much already." Neatness in appearance is, of course, an asset. After the interview, workers are tried out on the job and retained, shifted, promoted or discharged according to ability shown in actual work.

*Seasonableness and overtime.*—The manufacture of gloves and workingmen's wear does not show the seasonable variation which is characteristic of the garment trades as a whole. The demand is fairly constant the year round because of the nature of the product. The busy season begins in the spring or early summer and continues till late in the winter. The underwear industry shows the usual variation. The factories close from one to two weeks in the summer. The working day is from 6:00 a. m. to 6:00 p. m., in one factory, and from 7:30 a. m., to 5:00 p. m., in another. Three of the factories close at 4:00 p. m., on Saturday. Overtime work is demanded occasionally. Some factories pay the usual piece rate for overtime, others pay one and a half times the regular rate. One factory runs three evenings a week a few weeks of the year, but overtime work is optional with the individual worker.

### **The Spooling Department Foreman**

*What the worker does.*—The foreman receives orders from the office specifying the amount and kind of yarn to be spooled. He makes out from this his directions for each worker. He oversees the work and teaches new workers. He starts the spooling machines and regulates them. He also works out attachments each



of which do the stripping and cleaning suited to the particular yarn which is to be spooled. He makes minor repairs on machines but in case of serious trouble he calls the machinist.

*Special knowledge required.*—Besides the special knowledge required of the regular spooling operators the foreman must be familiar with the office order system and know how to make out the order for each worker. He must have a thorough knowledge of yarns.

*Special skill required.*—The foreman must be something of a mechanic in order to keep the machines in perfect adjustment and invent the stripping mechanism suited to each kind of yarn used.

*How special skill and knowledge are obtained.*—Special knowledge and skill may be obtained on the job by instructions from the superintendent and by experimenting.

*Mental and physical requirements.*—The foreman should have executive and inventive ability.

*Hazards and inherent character of work.*—As machines are not dangerous and gearings and belts are adequately guarded, hazards are reduced to the minimum.

### **The Spooling Machine Operator**

*Machines used.*—Spooling machines resemble tables divided in the middle by a double row of spindles and carrying a low shelf for spools. On the table proper are the cones or bobbins on which the thread is finally wound. The thread from the original spool is fed through a hole, then through a cleaning and stripping mechanism, which, by various devices, brushes out knots and imperfections in the yarn. It is then passed around a tensioning device "which reveals weak spots in the yarn by breaking it." From there the thread passes along the arm of a guide to the bobbin which is on a spindle. The revolving of this spindle winds the yarn on the bobbin. "The guide arm," over which the yarn passes alternately, ascends and descends at a rate gauged to distribute the yarn evenly on the bobbin. Every table holds forty bobbins, twenty on a side.

*What the worker does.*—There is one operator called a "spooler" to every table. She receives directions from the foreman concerning

cerning the kind of yarn to be spooled. She gets the original spools of yarn from the stock room, puts them on the machine and threads them to the bobbin. She watches the revolving bobbins, takes them off when they are full and replaces them with empty bobbins. If a thread breaks, the operator stops the bobbin by lifting a catch which detaches it from the spindle, ties the thread in a weaver's or square knot, and starts the bobbin again by releasing the catch. If there is anything wrong with the mechanism the operator reports it to the foreman at once. She cleans and oils the machine.

*Special knowledge required.*—The worker must know the factory system which involves a knowledge of where to get stock, where to return work and how to keep a record of the work. She must know how to attend the machine as described above and how to tie the weaver's knot.

*Special skill required.*—Skill in this work consists in performing the operations described with speed and accuracy.

*How special knowledge and skill are acquired.*—Special knowledge and skill are obtained on the job by instructions from the foreman. It takes only a few days to learn the content of a job and a few weeks to be reasonably efficient.

*Mental and physical requirements.*—A girl whose hands are too clumsy to tie a knot swiftly would either prove useless in this work or would fail to make a living wage. Energy and ambition have some chance to operate here as proved by the fact that operators during the same period of time turn out varying numbers of finished bobbins. The mental part of the work consists of the capacity to distribute attention in such a way as to watch closely all of the forty spindles.

*Hazards and inherent character of work.*—The girl stands at her work and walks from one end of the table to the other as the machine requires. She sits at the end of the table during the intervals when there is nothing to do. There is ample space between machines and the lighting is good.

*Wages.*—Weekly earnings vary from eight to twelve dollars. Work is on a piece basis.

### **The Knitting Department Foreman**

*What the worker does.*—The foreman receives his orders from the office indicating the yarn to be used for each web and how many

yards of each kind of web are to be made. He teaches work how to operate machines and oversees the work at every point. He may make adjustments on machines, but serious adjustments and repairs are made by the machinists.

*Special knowledge required.*—Besides the knowledge required by the operators the foreman must know how to teach new work and he must know the kinds of yarn used. He must understand the operation of the machines thoroughly and how to manage the work efficiently.

*Special skill required.*—Mechanical skill is needed in adjusting the machines.

*How special knowledge and skill are obtained.*—Special knowledge and skill may be obtained by experience following the instructions issued by the superintendent.

*Mental and physical requirements.*—Besides the requirements of the regular operators the foreman must have mechanical and executive ability.

### **The Knitting Machine Operator**

*Machines used.*—The knitting machines are about eight feet in height. They consist of three units; the bobbin holders, the cylinder weaving the threads, and the winding reels. Racks on the floor hold the bobbins, the number of which depend upon the yarn used and the quality of fabric desired. Some machines carry as many as 2,100 needles, each of which fits into its own socket. A thread from the bobbin is threaded through various holes around a tension into a guide. The thread is then pushed by the notched wings of the guide on revolving wheels, under the beards of the needles. The machines used in Richmond carry two sets of needles which alternately operate to make the stitch. The entire cylinder revolves at high speed, and as each needle comes under the stationary press the needle beard is pushed in so that its point enters a depression, and immediately the alternate needle begins to operate. The new stitch is pulled through the old like a slip noose after the press has operated to hold the needle beard down. One set of needles operate at once. As the tubing is woven it is slowly drawn up from the cylinder by two rollers between which it is flattened and finally wound on a third roller at the top. There are two kinds of machines used.

both of the spring needle, circular type, differing in size according to the size of tubing knit. The one described makes a medium or heavy variety. The other machine with a single set of needles makes gauze or summer underwear of a very fine variety.

*What the worker does.*—For this operation only boys are employed, not because girls could not do the work, but because boys are available. The worker threads the machine and starts it, after filling it with the proper bobbins selected according to written orders from the foreman. If a needle breaks, the machine stops; and, although the position of the cylinder at stopping indicates in which section the trouble is, the operator must locate the exact needle and replace it with a new one. He must tie threads in a weaver's knot when they break. Through the entire process he observes the web and endeavors to so adjust his machine as to produce perfect work. If anything serious is the matter with the machine he calls the foreman. When a roll is finished he detaches it from the machine and replaces it with an empty roll. He oils and cleans the machine at regular intervals.

*Special knowledge required.*—The knitting machine operator must know the factory system, where to place finished rolls and how to report completed work. He must know how to thread the machine, how to oil it and clean it, how to replace broken needles, how to tie the thread and how to tell when the machine is running correctly. He must be able to distinguish perfect from imperfect fabric and know what causes imperfections. Highest efficiency in operating depends upon the acquisition of some mechanical knowledge.

*Special skill required.*—Skill consists in tying threads, making minor machine adjustments and replacing broken needles.

*How special knowledge and skill are obtained.*—That special knowledge and skill may be obtained on the job is proved by the fact that the manager has employed boys without any training whatever, previously employed in grocery, or drug stores. Specific instruction is given by the foreman. It takes about three weeks to teach a boy how to operate a machine and six months for him to become an expert.

*Mental and physical requirements.*—No special strength is required except in removing the rolls. Mechanical ability is not absolutely required but is an asset for promotion.

*Hazards and inherent character of work.*—The workers stand and move about their work. Machines are not dangerous if the operator understands how to stop them. There are no special mental or physical strains.

*Wages.*—The weekly wage is twelve dollars with a bonus for good work.

### **The Marking and Cutting Department Foreman**

*What the worker does.*—The foreman may do any of the work of the marking and cutting department. He teaches new workers and directs the work of the whole department and makes a report on output.

*Special knowledge required.*—Besides the knowledge required of the regular workers, he should know how to route the work and direct workers. He must know the factory system thoroughly. He should also be able to estimate the ability of the workers under him.

*Special skill required.*—No skill is required beyond that for the workers in the department.

*How special knowledge and skill are obtained.*—Special knowledge and skill may be obtained by previous experience in the department or by instructions from the superintendent.

### **The Marker**

*What the worker does.*—The marker indicates on the cloth the outline of the pattern and where cuts are to be made. In the workingmen's wear industry the marker is a man whose work is as follows: Before actually marking the pattern on the cloth he calculates, on the basis of the original order, the width of cloth needed, the number of yards and the length of the spread. Bolts come in varying widths and lengths. He lays the stiff cardboard pattern on the cloth and marks around it with a pen. He must use a light pencil for dark goods, and a dark pencil for light goods. He marks out each garment and all its accessories, including facings, bands, etc., in the same section of cloth and marks each piece the size of the garment.

Marking for the underwear industry is different because the marker has to inspect the weave for the defects and so can mark

only one piece of the pattern at once. The work, which is performed by a woman, is as follows: The worker has before her the pattern and knows what length of cloth it will take. She makes a pile of about two dozen thicknesses of cloth of the required widths which she has cut to the right length for the pattern. Before laying each thickness she holds it up to the light to see that there is no defect in the weave. If there is she must reject the piece altogether or so plan the cuts that the defect will come in a place which is to be cut out of the finished garments, such as at the ankles or cuffs or under the arms. Then she lays the pattern on top of the pile and marks around it with a pencil.

*Special knowledge required.*—The essence of this job is to lay the pattern on the cloth economically so there will be as little waste as possible. The worker must know thoroughly all the patterns used, which amount to at least a half dozen different styles and as many different sizes for each style. She must know how the cloth is to be cut for each piece of the pattern, whether it is crosswise, lengthwise or bias.

The marker for the workingmen's wear factory must, in addition, know how to calculate the cloth needed by the spreader and the widths and lengths available for each kind of fabric. He should know how to mark the pattern so as to match stripes or checks. He may suggest to the pattern maker more economical ways of designing the pattern.

The marker in the underwear factory must be able to recognize defects in the weave.

*Special skill required.*—No skill is required beyond reasonable speed and accuracy in handling the pattern. The knitted fabric is stretchy and harder to handle than ordinary cloth. It must be laid smooth with edges even.

*How special knowledge and skill are obtained.*—Special knowledge and skill can be obtained on the job. Knowledge of the shape of the pattern may be gained by previous experience as a cutter, in the case of the man; or, at sewing at home, in the case of the woman. It takes several months to become a good marker for workingmen's wear and less time to learn the work of marking underwear.

*Mental and physical requirements.*—This worker should have a definite sense of form which will enable him to imagine the outline of the pattern within the dimensions of the cloth without

actually so placing it. This requires a person whose imagery is the visual type.

*Hazards and inherent character of work.*—The workers stand at a table and are obliged to bend over almost constantly.

*Wages.*—Wages for men cutters in the workmen's wear factory are eighteen dollars per week. For the women in the underwear factory the wages are on a piece rate basis and earnings vary from eight to fifteen dollars a week.

### The Spreader

*What the worker does.*—This worker spreads the cloth for the cutter on a table about thirty feet long. He takes a bolt of cloth, cuts the threads, loosens the bolt and arranges it on a small truck or carrier which moves above the table on a track. There is a rack on one end of the truck over which the cloth runs, as the carrier moves over the table. First the spreader fastens the cloth at one end of the table by weights, moves the carrier down to the other end again, fastens the cloth and moves the carrier back. This operation is repeated until there are the required number of thicknesses of cloth on the table.

In the glove industry the spreader first lays the cloth in thirty-six thicknesses, then slides the whole pile over on to the table immediately in front of the cutting machine.

In the workmen's wear industry the spreader gets from stock the amount of cloth indicated by the marker. First he marks with chalk the length of each piece of the garment on the side of the table, in order to know when he comes to the end of the bolt how much the end of the next bolt must overlap, so that no gaps will be left in the pattern. He matches colors in starting a new bolt; a different color cannot be started in the middle of a spread. Shirts are laid in two dozen lots, 72 thick. Overalls, jackets and combination overalls are bundled one dozen in a lot. They are usually laid 96 thick. The spreader has to arrange the cloth so that the girl who bundles it can easily select the lots. To do this he either changes the color of the cloth when one lot is completed, or spreads a length of paper between lots. The paper used is about one-half the width of the cloth. He must lay it so that each part of the pattern will have a thickness of the paper between lots.

*Special knowledge required.*—The worker must know how to

lay the cloth evenly. In spreading workingmen's wear, the worker must know how to mark the lengths of the patterns on the table and how to fit the ends of the bolts together accordingly.

*Special skill required.*—The skill required for this work consists in handling the cloth easily, keeping it smooth with edges even and performing the whole operation with reasonable speed.

*How special knowledge and skill are obtained.*—Special knowledge and skill can be obtained on the job in a few weeks by instructions from the foreman.

*Mental and physical requirements.*—The worker must have at least ordinary strength to lift the bolts of cloth. The work is considered too heavy for women.

*Hazards and inherent character of work.*—Workers walk around a good deal so there is not the physical strain of monotony. They have to bend over the table and reach to the other side of it.

*Wages.*—Wages are about twelve dollars a week.

### The Knife Cutter

*What the worker does.*—The cutter cuts the stock along the lines indicated by the marker. The knives admit a spread of cloth about 3 inches thick. Two kinds of knives are used; the circular knife, and the perpendicular knife. Both are run by electric power, have a standard which slides under the cloth and are steered by a handle at the back. The circular knife is used for straight lines and the perpendicular for curves and notches. The cutter oils, cleans and makes minor repairs on the knife. This may involve taking it apart. He holds the cloth down with his left hand and guides the knife with his right. He must follow the marks exactly. The cutter for workingmen's wear assembles fronts and backs of shirts and jackets. The cutter for underwear puts pencil marks on the edge of some of the pieces as guides for the machine operators. After the cutting he bundles the pieces for the entire garment, two dozen in a bundle. He inserts in the bundle the tickets which are to be filled in by each subsequent operator. The underwear cutter can cut only one pattern at once, while the cutter for the workingmen's wear cuts the whole spread at once, first going over it with the perpendicular knife, then with the circular knife.

*Special knowledge required.*—The cutter must understand the



operation and care of the machine. He must know which machine to use for each cut. He must know the best way of systematizing his work; for instance, in cutting a whole table he must go from left to right so that it will not be necessary to cross his left hand over the right in removing the pieces cut. For assembling, the worker should know all parts which go into one garment. He must know the order in which they are used by the sewing machine operator.

*Mental and physical requirements.*—Forcing the knife through the cloth requires strength in arms and shoulders which women do not possess. The worker should have a sensitive touch and good co-ordination in order that he may feel bulging or slipping of the cloth under his left hand and react instantly to this sensation with his right hand which is guiding and pushing the knife. Accurate muscular control is necessary to keep the knife on the line. With experience the operation becomes so far automatic and reflex as not to require a constant focus of attention.

A knowledge of drafting patterns is an advantage so that he may know what lines must be followed exactly and on what line he can have some leeway. For instance, in cutting the leg piece to an overall beside which is the piece for the band, it saves on cutting line to neglect the space between and cut only on the line for the band, leaving the extra material if any, in the leg piece.

If the knife is not running correctly, the cutter should know how to detect it by the sound of the motor. This is possible only after considerable experience.

*Special skill required.*—The skill required consists in guiding the knife exactly on the marked line, in making repairs to cutter and sharpening knife blades.

*How special knowledge and skill are obtained.*—Special skill and knowledge can be obtained on the job in a month or so by instructions from the foreman. It takes at least a year to become an expert cutter.

Knowledge of drafting cannot be obtained on the job but must be learned in school or from a special teacher.

*Hazards and inherent character of work.*—The knives are guarded but there is always some danger of cutting the fingers. The worker stands before a table.

*Wages.*—Wages are about fifteen dollars a week.

### The Leather Cutting Department Foreman

*What the worker does.*—Each morning the foreman gives out the leather to the cutters and takes from each the work of the previous day. As he gives out leather to each one he indicates the die to be used. He keeps a record of the material given to each man and the work that each does. He analyzes this record to see that each cutter is getting as many gloves as he should from the material furnished him.

He teaches new workers and oversees the work of the whole department. He also oversees the stock and shipping departments.

*Special knowledge required.*—Besides the requirements of the regular cutter he must know how to teach and direct the work. He must know how to pack goods and the general facts about shipping. He must know the kinds of gloves made and the kinds of stock required for each.

*Special skill required.*—No skill is required beyond that of the regular cutter.

*How special knowledge and skill are obtained.*—By working as a cutter the special knowledge and skill may be obtained.

*Mental and physical requirements.*—Besides the requirements of the regular cutter the foreman should have executive and teaching ability.

*Hazards and inherent character of work.*—There are no hazards peculiar to this job.

### The Die Cutters

*What the leather die cutter does.*—This worker cuts all the leather pieces used in glove making. He uses a power press whose head swings on a pivot over a cutting block. The dies used are metal pieces shaped to the outline of the glove pattern. They are about one inch high, a quarter of an inch thick at the top, tapering to a cutting edge at the bottom. The cutter takes the skin from the rack at his side, spreads it smoothly on a block, places the large die on the skin, swings the press over the die and pulls a lever which releases the power and causes the weight to be exerted on the die. Releasing the lever releases the weight. He swings the press back, picks up the cut piece and puts it on a pile of similar

pieces on a shelf at the side. He piles them in pairs. When he has cut all the large size pieces possible he cuts from the corner the smaller thumb pieces using the appropriate dies. The scraps are pushed from the block into the scrap basket at his right. The cutter oils and cleans his own machines. He receives the leather by weight in the morning and turns in the work of the previous day to the foreman tied up in three dozen pair lots.

*What the tip die cutter does.*—In order to utilize the many scraps from the regular leather cutter a style of gloves are devised which are tipped with leather across the fingers. Boys are employed to cut the finger tip pieces. The boy takes the scraps from the scrap basket beside him, smooths out the pieces on which he places the die and cuts the leather by striking the top of the die with a hand mallet. He cuts three different sizes of finger tips, sorting them into a tray before him which has three divisions.

*What the cloth die cutter does.*—This worker cuts all the material for the cloth gloves. He operates a power press with a head which moves up and down on vertical standards above the cutting block. Behind the press extends a long table on which the cloth is laid thirty-six layers thick. The cutter takes hold of the cloth, pulls it toward him so that it comes nearly to the edge of the cutting block. He then places the die on the cloth and holds it there while he presses a foot treadle which releases the power. The press then descends upon the die and forces it through the cloth. Releasing the foot treadle releases the die. When the pressure is released he pulls out the die and knocks out the pieces from the center and places them on a shelf in front of him, after which he cuts entirely across the end of the cloth then trims it roughly and pulls the cloth towards him. The waste pieces go into a crate at his side. Cutters oil and clean their own machines. For each cut the die must be placed so as to waste no material. Economizing cloth is the secret of the whole job.

The head cutter has charge of the department and reports work done and material used. In some establishments the cutter also does the spreading described above. The cutter must know how his dies can be used to cut to the best advantage. For instance the finger die is wide at one end and narrow at the other, to economize cloth he turns the wide end toward him for one cut and away from him for the next cut. He must know how to operate and care for the machine and handle the cloth.

*Special knowledge required.*—The most important thing in this whole job is to cut the leather economically and avoid defects. Each time the cutter places the die he must know how to place it to the best advantage and which die to use. The regular leather cutters must know how to care for and operate the presses and how to report on work done.

*Special skill required.*—The skill on this job consists in placing the die quickly and accurately and in saving time between operations. The leather cutter must instantly plan the cutting of the whole piece when he first picks it up. The die must be placed accurately in cutting on the edge so as to cut exactly on the edge.

*How special knowledge and skill are obtained.*—The special knowledge and skill may be obtained on the job following the direction of the foreman.

*Mental and physical requirements.*—In order to cut the leather economically the worker must have some sense of form and he must be able to recognize defects in the leather to avoid them. The requirements are the same as for the markers described above.

*Hazards and inherent character of work.*—Workers stand at their work. There is practically no danger from the machines, since the space between the die and the press is too small to admit a man's fingers. The tip cutter is only in danger of hitting his own fingers with the mallet.

*Wages.*—Regular cutters make from eleven to fifteen dollars per week. Tippers are boys making from five to six dollars a week.

### **The Sewing Department Forewoman**

*What the worker does.*—The forewoman may do the work of any of the machine operators. She teaches new workers and directs the work of the whole department. In case the inspector fails to get the operator to correct a mistake the forewoman must see that it is done. She may shift workers from one operation to another according to the demands of the work or the ability or desire of the worker. She reports the total output of the department.

*Special knowledge required.*—Besides the knowledge required for the sewing machine operator she must know how to teach the work, how to manage other workers and how to route the work

efficiently. The forewoman must know the factory system thoroughly in order to teach it and to trace mistakes to the operator responsible. She must judge workers in order to place them on the operation for which they are best suited.

*Special skill required.*—The forewoman should be a skilled operator on any of the machines of the department.

*How special knowledge and skill are obtained.*—Special knowledge and skill can be obtained by experience as an operator and by instructions from the superintendent.

*Mental and physical requirements.*—Besides the requirements of the ordinary workers the forewoman should have teaching and executive ability.

*Hazards and inherent character of work.*—The hazards are the same as for the regular operator. The strain involved is that incident to directing and managing people rather than machine operation.

*Wages.*—Wages vary from twelve to eighteen dollars a week according to size of establishment. The larger factories employ an assistant forewoman at eleven to fourteen dollars a week.

### **Sewing Machine Operators**

*What the underwear seaming operator does.*—This operation consists of sewing up the entire garment. The machine used is a single-needle Union Special. The machine is equipped with a knife in place of a gauge which trims the edge of the seam. There is a device for cutting the thread at the end of each seam. The operator lays the two pieces which she wishes to sew right side together, the edges meeting exactly, and guides them through the machine. She sews up the shoulder seams, stitches the under arm seams and finally the leg seams. This worker also sews the label on the inside of the garment in the middle of the back near the edge of the collar.

*What the underwear cuff seaming operator does.*—This operation consists of covering the seams so that the weave will not ravel. This worker covers all the seams in the garment except the collar, the ankles and the cuffs. She takes one garment from the lot, turns it right side out, then guides each seam under the foot of the machine which puts the interlocking stitch over the seam on the

wrong side. A two-needle machine with a cylinder bed is used which permits the whole leg or sleeve of the garment to pass over it while being stitched.

*What the underwear collar operator does.*—The collar consists of a narrow piece around the neck of the garment in which the web runs lengthwise instead of crosswise. The worker holds the garment right side up, and feeds it through a special two-needle machine which makes a special trimming stitch over the collar seam.

*What the underwear facing operator does.*—In this operation the muslin facing is put on each side of the opening of the garment. The worker takes the facing piece, puts it wrong side up on the wrong side of the garment edges even, and stitches it. She then turns the facing piece back on the wrong side of the garment, stitches the seam again, and turns in the other side of the facing and stitches it down. The other facing is put on in the same way. The wider buttonhole facing is put on the right side of the opening, and the button facing on the left side. When both facings are on, she turns in the bottom and runs two stitchings across it. The machine is the ordinary single needle type.

*What the underwear cuff and ankle operator does.*—This worker operates the Union Special three-needle machine which makes a lap stitch that sews and covers the seam at once. She places the end of the sleeve overlapping the upper edge of the cuff, both of which are right side up, and stitches them. This operation is repeated for the other sleeve and so on for the two dozen pairs. She then cuts the thread, and sews the ankle pieces on the bottom of the leg in the same manner.

*What the underwear collar crocheting operator does.*—This worker guides the edge of the collar and the edge of the front opening into a two-needle machine which makes a special crocheting stitch over the edge.

*What the canvas glove operator does.*—The glove comes in five pieces: The backs of the second, third and fourth fingers; the back of the thumb and a palm piece, which includes the whole first finger and the under side of the other fingers and thumb. The operator brings a stack of parts to her machine and places them on a rack at her side. She sews the entire glove except the knit wrists.

First the operator sews the thumb on the palm piece. This is done by placing the thumb piece over the palm piece, holding them even, right sides together, starting them under the foot of the machine and guiding the seam. There is a gauge on the machine which prevents the seam from being too wide but from being too narrow. Without cutting the thread she runs the next glove and so on through the three dozen pairs. She cuts the thread between gloves with scissors.

The next operation consists in sewing on the piece which forms the back of the second finger of the glove. The operator places the piece on the part of the palm which is to form the back of the first finger, right sides together, edges even, then runs it through the machine, after which she sews on the third finger. This finger is cut with one side higher than the other and is placed on the glove so that the high side will come next to the second finger, otherwise the seam would be uneven at the bottom and would have to be ripped out. She next sews on the piece which forms the back of the little finger. The three dozen gloves are run through in this way and then cut.

If a stiff cuff is needed the operator puts it on at this time. She slides the gauge back, takes the glove, right side up, stretches it out flat, laps the upper edge of the cuff over the lower edge of the glove and runs it through the machine. Both the glove and the cuff piece must be held so that the seam will be the correct width. When three dozen pairs have been run through she cuts the gloves apart.

The next operation consists of sewing up the fingers. The worker runs the gloves through, pair by pair, beginning at the top of the first finger in one glove sewing a continuous seam around each finger and down the outside to the bottom of each cuff. On the next glove, she begins at the bottom of the cuff and finishes at the end of the first finger, after which she backstitches the bottom of each cuff. She runs through three dozen pairs in this way and then cuts the thread apart with the scissors.

There is another style of glove in which the palm includes the little finger as well as the first finger. This varies the operation only by making one less finger piece to sew in and by doing the same with the seam down the outside of the little finger.

*What the knit wrist glove operator does.*—A machine with a circular bed is used. The operator sews the knit wrists on the glove, after which she trims the edges of the wrist, if necessary.

places it inside the glove, so that the edges of the glove and wrist piece are even; then places the whole over the circular bed of the machine, guiding the glove as it goes around. This completes the process.

*What the cuff glove operator does.*—The cuff machine operator makes all the cuffs for the gauntlet gloves. She runs each cuff through the machine which makes two stitchings down the center about one inch apart. The cuffs must be so run in that the ends fit closely together and no thread is wasted and only one cut of the shears will be necessary to cut them apart and trim the thread. Since the cuffs are cut in the shape of a truncated pyramid, she has to turn over every alternate cuff. After running them through she cuts the cuffs apart and puts them in piles of three dozen pairs each. The machine is so gauged that there is no necessity of guiding the cuffs after they are once started. It is a two-needle Union Special machine requiring four threads.

*What the trimming cuff glove operator does.*—The operator runs the cuff through a machine which binds and trims the edge with red thread. She then takes a handful of cuffs from her lap, spreads them out fan shape in her hands and runs them through one by one without stopping the machine. When she has run through the lot, she stops and cuts the threads and runs them through again on the other edge. Young boys or girls may be employed to cut the threads. The machine used is a single-needle Union Special with gauge and walking foot, which holds the leather down.

The first operation is to sew the leather onto the canvas lining. The operator lays the leather palm on the canvas palm with the right side of the canvas and the right side of the leather up. The edges of canvas and leather must fit exactly. She then stitches from the tip of the first finger to the thumb hole, then, without breaking the thread, arranges the leather thumb over the canvas thumb in the same way, thus stitching the leather to the cloth. She then sews the second thumb and the second palm, and so on, pair by pair, through the whole lot, after which she cuts the pieces apart.

In the next operation she sews up the thumb and sews the lower part of it to the thumb hole of the glove. She then cuts the thread and sews the inner side of the thumb to the thumb hole of the glove. In this operation she must hold the right sides of the



cloth together and see that the edges are evenly matched. She cuts the gloves apart and partly turns the thumb right side so that it is out of the way for the next operation.

*What the leather glove operator does: Sewing backs.*—This consists of the glove as it comes from the thumb operator, 1 the three finger pieces, which this operator sews in. She begins with the second finger, lays in evenly, wrong side up, on the piece to the edge of the first finger and stitches it. She then stitches the third finger, then the second, then the little finger to the thumb finger. She must match the pieces evenly, place them so that the right sides of the cloth may be together and be sure that she sews the finger on in the proper position. If the glove is to have a stiff cuff, she sews on the cuff as previously described. The operator uses a Singer machine with an ordinary foot and gauze except for the cuff seam.

*What the leather glove operator does: Closing.*—The closing operation of leather gloves is the same as for canvas gloves.

After the three dozen pairs are closed, she runs them through again to sew down the lining at the tip of the finger. On each finger she must place the lining evenly over the leather and feed it through the machine. When the three dozen pairs are stitched she cuts the thread between fingers and between the gloves and trims the seams. This is necessary because the leather may be stretched in sewing and extend so far over the cloth that the seam would be too bulky when turned.

Machines used for this work are the one-needle Union Special with the circular foot. One of these operators has a machine near the cuff operators. Besides the regular work she supervises these workers and trains new ones. She receives an extra wage for this work.

*What the leather tip glove operator does.*—Some of the canvas gloves are made with a leather tip on the end of each finger. To the left of the operator is a tray containing the three different sizes of leather tips. The operator sews a tip on each finger and thumb. She usually sews all the thumbs first, running on the seam across the thumb at the bottom of the tip. Next she feeds through the three dozen pairs of gloves and cuts them apart. Beginning with the first finger she sews down the outside edge across the base of the tip. For the next two fingers she sews across the base only, and for the little finger, across the base and up the side. In one style of glove the little finger is sewed down

only at the base. She runs through the three dozen pairs in this way, after which she cuts the thread between the fingers and between the gloves. She must sew the tips on accurately, get the leather right side up and fit the right size tip to each finger. The machine used has a circular foot.

*What the palm patching glove operator does.*—To utilize scraps of leather, some of the gloves are patched across the palm at the base of the fingers and the two pairs of fingers are patched together. The operator patches together the two pairs of fingers by laying them side by side with the bases of the second and third fingers overlapping enough for the seam and then stitching them. Other pairs of fingers are patched in the same manner. The double-needle machine with a roller foot is used.

*What the shirt hemming operator does.*—The first operation in making a shirt is hemming the bottom and sewing in the gusset which goes to the bottom of the under-arm seam. The operator takes the piece for the gusset which is a square, folds it to a triangle, slips the edge of the shirt into the hemming adjustment on the machine and slips the edge of the gusset piece under the hem. One gusset must be sewed on the front piece of the shirt, another on the back piece.

*What the shirt facing operator does.*—This operation consists of sewing the button and buttonhole facing to the front of the shirt and facing the slip in the sleeves.

The buttonhole is sewed on first. The operator takes the top facing, adjusts it in the machine guide, which folds in both edges. The underneath facing is a plain white strip coming in a continuous roll. This is adjusted to a second feeder which also folds in both edges.

The operator then inserts the front of the shirt, feeding it between the upper and lower facing next to a gauge. The machine makes two stitchings on each side of the facing. She feeds through the two dozen shirts consecutively, then cuts them apart and trims the bottom of the facings. It is important to leave practically no space between shirts because this means a waste of facing material.

The buttonhole facing machine works in exactly the same way as the one described, except that it has only two needles and makes only one stitching on each edge of the facing. The sleeve facings and placket are applied in the same way as the button-

hole facings. The worker uses four different machines with fixed gauges and attachments.

*What the shirt pocket operator does.*—The pocket operator makes the pocket, sews it to the shirt and also sews on the shirt yoke. The worker first sews the painted flap to the pocket piece feeding through the full two dozen. She then cuts the flap apart, turns the flap piece over on the right side of the pocket, stitches the same again on the right side and so through the two dozen pair. She sews another stitching about a quarter of an inch from this, after which she sews the point of the flap to the pocket.

The next step is to sew the pocket to the shirt. Most shirts have only one pocket. In case there are two pockets, the places are marked. In case there is only one, she places the top of the pocket, on the line of the bottom of the armhole in the middle of the left side. If the material is striped, the pocket must be placed so that the stripes will match. She turns in one side of the pocket, starts the machine, sews to the bottom, turns the next edge and so on around. She then puts on another stitching about a quarter of an inch inside the first, cuts the thread and proceeds to the next shirt. This worker also sews the tag to the inside of the yoke, showing lot number and size. She places the coupon on the yoke in the middle of the wrong side of the shirt, sews across each end and cuts the thread.

The yoke is sewed straight across the shirt with no point or gathers. She takes the two yoke pieces, wrong side together, starts them in the machine which turns in the edges, and feeds in the back of the shirt between the two yoke pieces. She feeds through the whole lot of shirts and cuts them apart.

This operator also finishes the facing. She turns in the buttonhole facing, places it on the button facing and runs two stitchings across the bottom.

*What the side wheel felling operator does.*—In this operation the sleeve seam and the under-arm body seam are taken. The machine is constructed with an arm extending toward the operator through which the sleeve and body of the shirt are placed. The seam is started at the wrist end of the sleeve and continues to the bottom of the under-arm seam where she includes the gusset piece. She slips the garment off the machine and cuts the thread, sews the other side, cuts the thread and starts the next shirt.

*What the shirt cuff operator does.*—This operator makes the cuffs as she sews them to the shirt. The machine used is an ordinary one-needle Singer machine. She places the cuff end of the sleeve wrong side up, over the outside piece of the cuff right side up, edges even. She gathers the seam as she sews it to the cuff. She then turns the cuff back, sews on the under cuff piece and stitches the seam again. This time she stitches around the cuff, turning in the edges evenly.

*What the shirt collar operator does.*—One of the most skilled operators sews on the collar. The collars used on most of the shirts have a band separating the collar from the shirt. The first step is to make the collar. The worker lays the two collar pieces together, wrong side out, sews around the three outer edges and then turns the collar right side out. Two rows of stitching are run around the three edges. Each stitching is done for the whole lot at once. The worker must stop between each of the three operations to cut the threads.

The next step is to sew the band to the shirt. The band is laid wrong side up on the right side of the shirt and the edges held even while the worker guides the seam through the machine. Both of these seams must be stitched very evenly and both band and collar placed evenly on the shirt.

The next operation is to place the other piece of the band, right side up, to fit over the piece which has been sewed in. She turns in the edges and sews completely around the band.

*What the pants seaming operator does.*—This operator sews the inside leg and seat seams of trousers with an ordinary single-needle machine. These are just plain seams. The front and back leg pieces are laid together, the wrong sides together, the edges held even and the seam stitched.

*What the pants finishing operator does.*—This operator turns the band in and sews it down and sews on the belt and shoulder straps.

*What the pants hemming operator does.*—After the seams have been pressed the pants legs are hemmed on a blind stitching machine. This makes a stitch which shows only on the wrong side. The worker turns back the pant leg, trims it, turns in the edges, places it over the machine body, and sews the seam.

*What the buttonhole operator does.*—The buttonhole nearest the neck band is first sewed. Distance between buttonholes

is determined by the gauge. The machine stitches the buttonhole, cuts it, cuts the thread and stops automatically. Buttonholing may be made on a Singer machine or a Reese three-needle machine, which carries an extra thread around the buttonhole to strengthen it.

*What the button sewing operator does.*—The worker marks the places for the buttons by placing the buttonhole facing over the button facing and marking through the buttonholes with pencil. She places a button in the groove of the special three-presser foot of the machine, then places the button facing under the foot with the mark directly under the button. She then starts the machine which automatically sews on the button, stops and cuts the thread.

On pants the buttons are clamped on, not sewed. The operator marks the places for the buttons, then places the garment over the bed of the machine with the mark directly under the plunger, presses a foot treadle and the machine clamps on the button.

*Machines used by all operators.*—The sewing room is arranged with sewing tables all of which have a number of machines mounted on each side. In general the same table is used by workers performing the same operation. Most of the machines used are the power Singer or Standard machines; each is especially adapted to the particular operation for which it is used. Machines are threaded very much as those used in the home. The two-needle and three-needle machines are, of course, harder to thread than the one-needle machine. Like the domestic machine they have bobbins below and, in addition, a bobbin winding device at the side which winds the bobbin while the machine is running and stops automatically when the bobbin is full. To replace a bobbin the worker removes the empty one from the carrier, substitutes for it the full one from the spindle at her side, places it in the carrier and the carrier back in the machine. In case a needle breaks the worker removes it by loosening the screw in the presser foot, inserts the new one and tightens the screw. The Wilson Gibbs machines are operated in about the same way. The Union Special machines are threaded above and below. They have no bobbins.

Machines are started by pressing the toe on a foot treadle. Pressing with the heel stops the machine. The worker raises

the presser foot of the machine by pressing her knee sidewise against a lever. She cleans and oils her own machine, but calls the forewoman if any serious repairs are needed.

*Sources of stock.*—Each operator gets her own material from stock and returns her work to some definite place. She may get it from a stock girl or there may be trucks at the end of each table with divisions for finished and unfinished work.

*Special knowledge required of all operators.*—Every operator must know where to get her stock and where to return it. She must know what thread or threads to use on her machine; for instance, the double-needle glove cuff machine requires four threads each of a different kind. She must know where to oil the machine, how to clean and thread it and how to replace broken needles. She must be able to recognize any defect in the machine. She must arrange her work in her lap and on the table and run it through the machine in such a way that waste movements are eliminated and accuracy and speed maintained. She must know enough about fabrics to recognize the right and wrong side of the goods; she must know how to rip seams quickly; for example, the Union Special machines sew a chain stitch on the wrong side which can be ripped quickly by pulling the right thread.

The buttonhole operator must know which way of the goods the buttonholes should be made. Operators sewing on buttons must know how to mark the spaces between buttons and how to place buttons in the machine. The facing operators must know to which side of the opening each facing is applied.

The glove operator should know how the whole glove is made. The leather operator should know where the leather pieces are attached. The back sewing operator should know the order in which the finger pieces are applied.

The shirt felling operator should know how much to overlap each seam and how to adjust the cloth in the special attachment of the machine. The hemmer must know how wide the hem should be.

*Special skill required of all operators.*—Skill in sewing machine operating in these three industries consists in quickly and accurately assembling and arranging pieces which are to be sewed, in feeding these pieces into the machines, in guiding them properly, and in threading machines and making machine adjustments. The details of the general requirements are reported in the previous sections describing the routine of work of each operator.

*How special knowledge and skill are obtained.*—The necessary special knowledge and skill required of all sewing machine operators may be obtained during the course of the work. It takes about six weeks to "make" an operator, that is for an operator to reach the desired standard of work and attain sufficient speed to make five dollars a week. It takes several months to "make" a really good operator. For the first two or three days the forewoman spends considerable time with the new worker showing her how to adjust her machine and how to handle the materials. The forewoman can not train more than two or three girls at a time.

In one mill, for the first week, new operators are not placed on machines, as they are not used to the factory atmosphere, and the noise and speed of the machines frightens them, and the machine might "run away with them."

*Mental and physical requirements.*—The operator should have a sense of form which will enable her to see how the garment pieces fit together. She must have sufficient accuracy and muscular co-ordination to place the pieces exactly as needed the first time. She must react quickly in order to accomplish each operation in the least possible time. As one employer expressed it, the ideal worker is "speedy and neat." If unsatisfactory on one operation the worker is shifted to another place; for example, in glove manufacturing "sloppy and speedy" workers are placed at back sewing where speed is necessary and where the gauged machine is used. "Speedy and neat" workers are placed at thumb sewing where accuracy and speed are both necessary. "Slow and neat" workers are placed at closing gloves, where accuracy is the prime essential. After a time all work becomes sufficiently automatic as not to require constant focus of attention.

*Hazards and inherent character of the work of all machine operators.*—All machine operators sit at their work. Workers on jackets and overalls handle heavy materials. All machines are guarded with skirt guards but there is some danger in getting the fingers under the needle. There is inevitable strain due to the necessity of constant bending over the machine and to the required speed due to the piece-work system. At some of the machines there is no provision for resting the arms while working; notably the buttonhole and side wheel sewing machines. There is probably some strain in operating high speed machines but there

can be no adequate discussion of such possible without scientific study to ascertain the basic facts.

*Wages of all machine operators.*—The beginning wage is five or six dollars a week. Employers pay a higher beginning wage to out of town girls because their living expenses are higher. One employer estimates that it costs the company eight dollars to train a worker, crediting her with the work she does on a piece basis. Wages for the regular operators average eight dollars. Some make fourteen dollars a week; a very few seventeen to eighteen dollars on exceptional weeks. In the workingmen's wear industry the skilled workers on collars and felling receive two dollars a day.

### The Inspector

*What the worker does.*—The inspector receives the bundles as they come from the last sewing operator, opens them and inspects each garment carefully. Defective garments due to sewing operations are returned to the operator who is responsible; or, in some factories, to the forewoman of the sewing department.

In the underwear industry the inspector snips threads left at the ends of the seams, and mends defects due to imperfections in the web. Inspectors of the leather lined gloves, pair the gloves and place them on the rack to be packed. Inspectors of canvas gloves may also do forming. In the workingmen's wear industry the inspector folds the garments and cuts threads.

*Special knowledge required.*—The inspector must know the standard for each kind of garment. She must recognize defects in the garment, and know whether they are due to the weaving or sewing processes. She must know the organization of the sewing department in order to turn back defective work to the operator responsible. Inspectors in the workingmen's wear factory should know how to fold each type of garment.

*Special skill required.*—Skill in this work pertains largely to speedy and accurate reactions. Threads must be cut rapidly and close to the cloth without injuring the fabric. Garments must be folded rapidly and neatly.

*How special knowledge and skill are obtained.*—Special knowledge and skill can be obtained on the job by following the foreman's instructions. This is frequently the beginning position for newly recruited workers.



*Hazards and inherent character of the work.*—This worker sits at her work. In two industries there is some floating lint in the air.

*Wages.*—Earnings vary from six to ten dollars and a half per week except, for the younger workers in the glove industry who receive from five to six dollars a week.

### **The Presser**

For an analysis of the work of the pressers see Chapter XIV, "Dry Cleaning." The steam press and electric iron are both used in these industries.

### **The Folder**

*What the worker does.*—The folder measures and folds each garment preparatory to boxing. The folding table is graduated to show the exact proportions required for each size garment. The folder lays each garment on the table, measuring it to see that the size with which it is labeled is correct, after which she folds it.

*Special knowledge required.* The worker must understand the gauge which is used to measure the garment. She must know the correct way of folding every kind of garment handled.

*Special skill required.* Skill consists only in doing work with a fair degree of speed.

*How special knowledge and skill are obtained.*—Special knowledge and skill may be obtained on the job by experience and by instruction from the foreman.

*Hazards and inherent character of work.*—The folder does her work standing before a table. There is no special strain.

*Wages.*—Wages are on a piece basis and earnings vary from ten to fifteen dollars a week.

### **The Turner**

*What the worker does.*—The turner turns gloves right side out. This work is usually done by boys or girls, between the ages of fourteen and sixteen years. The machine used consists of four

tube like fingers set vertically in a table and a four-pronged bar which is so pivoted that pressure of a foot treadle brings the prongs of the bar down into the tubes.

*Special knowledge required.*—The worker must know how to operate the simple turning machine.

*Special skill required.*—Skill consists only in performing the whole operation with reasonable speed.

*How special knowledge and skill are obtained.*—In one day's time the necessary knowledge and skill may be obtained.

*Hazards and inherent character of work.*—Workers stand at their work. There is practically no danger from the machines because they are operated by foot treadles.

*Wages.*—Girls turning leather gloves receive from five to eight dollars per week. Girls and boys turning canvas gloves are paid at the rate of one cent a dozen and earn from fifty cents to five dollars a week. Of the latter sum, one employer said, "These kiddies have to work pretty hard to make that."

### The Former

*What the worker does.*—The former shapes the glove by pressing out the seams. The glove is placed over a steam heated metal form, shaped like a hand, but with no thumb, over which the glove fingers are placed. Another steam heated rod is used for forming the thumbs. The former places the thumb over the thumb form, pulls it down and presses the seam with his fingers. Then he places the fingers of the glove over the finger form and smooths down the seams. Boys do the leather glove forming and girls the canvas glove forming.

*Special knowledge required.*—This job requires skill rather than knowledge.

*Special skill required.*—Skill consists in placing the fingers over the steam heated forms, and in speedily smoothing the seam.

*How special knowledge and skill are obtained.*—A youth with ordinary intelligence may become proficient at this job in one day.

*Hazards and inherent character of work.*—The worker stands at this work. The form over which the glove is placed is hot,

although it would not burn the worker's fingers with a slight touch. There is some strain connected with the work because the worker has to exert force on the seams to flatten them out.

*Wages.*—Boys on the leather work receive from six to eight dollars a week; girls from five to eight dollars a week.

### **The Glove Stock Girl**

*What the worker does.*—The stock girl gives out stock to the sewing machine operators. She works behind a long counter, under which are bins for the various glove parts. Thread stock is kept in cases. Finger prices are taken directly from the rack behind the die cutters. The stock girl, upon issuing material, punches the operator's card in the appropriate place, or retains one of the worker's coupons upon which she marks the worker's number.

*Special knowledge required.* The stock girl must know the exact pieces and kinds of materials going into each kind of glove manufactured. She must recognize each operator at once, know the exact machine upon which she works and the exact stock she requires.

She must know what thread is used in each operation and for what machine the thread is desired; for example, in the cuff machine, four different threads are used in the same operation, thus she must know at once just what thread the operator ought to have for a particular part of the work. She should know piece rates in order to punch right columns on the operator's card in recording the stock given to the operator.

*Special skill required.*—No special skill is required, except the handling of material quickly.

*How special knowledge and skill are obtained.*—Special knowledge and skill are obtained only during the course of the work by following the instructions from the foreman of the sewing department.

*Hazards and inherent character of work.*—No special strains or hazards are incident to this work.

### **The Packer**

*What the worker does.*—Packers count garments and tie them together into bundles, or pack garments in boxes. In the glove industry the packers, who are youths, erect the folded boxes,

pair the gloves and place one dozen pairs in each box. In the workingmen's wear industry the packer, aside from counting and tying up the garments in neat bundles of a dozen each, is responsible for all materials used in the factory.

*Special knowledge required.*—Glove packers should know how to pair the gloves and fold boxes. The packer in the workingmen's wear factory must know how to keep track of stock and output.

*Special skill required.*—Skill consists in packing neatly and quickly.

*How special knowledge and skill are obtained.*—Necessary knowledge and skill may be obtained by following the foreman's instructions.

*Hazards and inherent character of work.*—There are no special strains or conditions tending to injure the health of workers.

*Wages.*—Wages vary from twelve dollars a week for the responsible workers, to five or six dollars for the youth who are the boxers.

### **The Bundler**

*What the worker does.*—The bundler follows the cutter and assembles the pieces belonging to each kind and size of garment in dozen or two dozen lots. The worker must bundle together only those pieces which have been marked for the same size of garment, since garments of different sizes are usually cut in the same strip. She ties together the different pieces of a kind and then all the bundles of pieces going into the same lot of garments. Bundle units must be so arranged that each may be taken by the machine operator in the sequential order of machine operating; for instance, the backs and fronts of the shirts are the first sewed together, therefore these parts must be at the top of the bundle. The trimming pieces, such as cuffs and collars, are sewed last, therefore these units must be at the bottom of the bundle.

*Special knowledge required.*—The bundler should know thoroughly the shape of every part of every pattern used and should have a knowledge of the sewing process which will enable her to make up the bundle correctly. She must know the system of coupons so as to select the correct sizes and lot numbers for each bundle.

*Special skill required.*—The bundles must be tied up quick and firmly.

*How special knowledge and skill are obtained.*—A “bright girl obtains the necessary knowledge and skill in from two to three weeks actual employment.

*Hazards and inherent character of work.*—The worker stands at her work and walks from one end of the table to the other. Some bundles are very heavy, notably the bundles for combinations and overalls.

*Wages.*—The bundler earns nine dollars a week.

### **The Labeler**

*What the worker does.*—The labeler marks the labels which are sewed into the garments and the coupons which follow the sewing processes. The lot number is printed in a small hand press. The labeler sets the type, and operates the press by means of a small crank. The size and amount are stamped on by hand with a rubber stamp.

*Special knowledge required.*—The worker must know how to use the machine for stamping the lot numbers. This involves selecting and placing the type in the press and feeding the cards in the press. She must know how to use a rubber stamp and must know how to route the work effectively.

*Special skill required.*—The skill consists in doing the work rapidly and accurately, and stamping each figure and letter in the correct space.

*How special knowledge and skill are obtained.*—The necessary knowledge and skill may be obtained in three weeks time.

*Hazards and inherent character of work.*—There are no hazards of any kind.

*Wages.*—The weekly wage is nine dollars.

### **SURVEY COMMITTEE RECOMMENDATIONS**

The majority of the workers in these three industries are female power sewing machine operators. Power machine sewing can be taught successfully in schools, but it is doubtful if the type of operating required in Richmond can be taught better in the schools than in the shops.

The knowledge and skill necessary for markers, spreaders and cutters may be obtained on the job during the process of the work. Young men employed as knitting machine operators might become special machinists for the knitting mill industry by taking advantage of the evening school course for machinists. The Committee urges those in charge of the night school to indicate this possibility to these young men.



## CHAPTER XIII

---

### INDUSTRIAL EMPLOYMENT: LADIES TAILORING, DRESSMAKING AND GENERAL SEWING

The great increase in the use of ready-made garments has lessened to a considerable extent the demand for tailoring, dressmaking, and general sewing. The dressmakers and seamstresses in Richmond, however, report they can get all the work they desire; moreover, housewives state that it is almost impossible to employ seamstresses when they want them. These facts indicate that the fields of dressmaking and general sewing are not overcrowded in Richmond. The great majority of Richmond dressmakers work in their own homes or the homes of their employers. Only four of those reporting have down town shops.

*Scope of the study.*—The occupations involved in the making of women's outer garments are highly standardized, in comparison with many other fields of employment. The Survey, therefore, reports only those facts required by the General Committee necessary in making educational recommendations. For a reliable description and analysis of the various processes and occupations the reader is referred to "The Report of the Minneapolis Survey for Vocational Education," pages 407 to 425. This study includes an analysis of the ladies' tailor and dressmaker, the seamstress and brief descriptions of the work of the waist maker, the skirt maker, the sleeve maker and general shop workers.

#### **Occupations and Number Employed**

The Survey received reports from the seventeen ladies' tailors and dressmakers employing five male and thirty-six female workers. Of this number, twenty-two of the workers were employed in the five regular shops of Richmond, which required four waist makers, six skirt makers, one waist and skirt maker, one draper, five helpers and one part-time worker.

The city directory for 1916 lists twenty-eight general dressmakers aside from those owning or employed in establishments.



This figure being obviously incorrect, a questionnaire was sent out through the public school children of the city, inquiring the name and address of dressmakers and seamstresses employed by the housewife. The names of ninety-five dressmakers and seamstresses were thus obtained. At least fifty more should be added to include those who have no children or whose children attend the parochial schools.

	Males	Females
Dressmakers and seamstresses .....	..	145
Shop proprietors .....	2	15
Waist makers.....	..	4
Skirt makers.....	..	6
Sleeve makers.....	..	3
General workers.....	2	1
Drapers.....	..	1
Cutters and fitters.....	1	..
Helpers (part-time).....	1	6
Total.....	6	181

#### Facts Common to All Workers

*General education required.*—Employers and employees should have at least an elementary school education and be able to read, and write in English. They should also be familiar with rudimentary arithmetic. Proprietors should be able to keep accounts, figure proportions, and fractions and have knowledge of trade magazine, terms and forms of bills, receipts, etc. All should have the general knowledge of garment construction, design and textiles gained from public school sewing and art courses.

*Source and selection of workers.*—The proprietors have usually been helpers or other workers in the field and later gone in business for themselves. The employees are obtained by advertising or direct application. The apprentice system has gone out of use and the knowledge of sewing made prerequisite to employment. The proprietor interviews all applicants.

*Working hours.*—Most of the dressmakers interviewed work ten hours a day, from seven or eight a. m., to five or six p. m. Two work nine and one-half hours, one works ten and one-half hours, and three work eleven hours. Four shorten the working day one hour on Saturday and one makes it three hours longer.

*Seasonableness and overtime.*—The seasonal variation in the work of a high grade dressmaker or tailor is very pronounced, the busiest season being from March to July or August and from September to December. Generally extra workers are employed during these seasons. No overtime is expected of the employees but the proprietor may have to finish a garment after regular working hours. Home dressmakers and seamstresses are steadily employed throughout the year.

*Hazards and inherent character of work.*—Invariably the working conditions are good, owing to the high grade of work done and the class of patrons worked for. In the cases where the shops are in the home of the proprietor the parlors are used for fitting and other well lighted rooms for sewing. The shops are generally on the second floor and well lighted and ventilated. There are no hazards inherent to the work.

*Promotion.*—In the strict sense of the word there is no promotion in Richmond dressmaking and tailoring shops. A seamstress stated that she was unable to obtain in the shop in which she worked the experience necessary to promotion. Two or three proprietors stated that an occasional raise in wages was offered to the skilled workers. The only definite advancement is in becoming a proprietor. The independent dressmaker by increased efficiency may enlarge the volume of her business, raise her prices, and choose her customers.

*Earnings.*—The high grade dressmaker is said to earn about \$75.00 per month; some report earning but \$50.00 per month, while others report \$125.00. Many home dressmakers, however, keep no account of their earnings. Seamstresses earn from \$1.75 to \$2.00 a day. Men in the tailoring shops report receiving \$25.00 per week, and in the dressmaking shops from \$6.00 to \$12.00 a week. Apprentices, or correctly stating, helpers, are required to work from four to six months for nothing, and then from fifty cents to \$2.00 a week until they become proficient workers.

### **The Dressmaker**

*What the worker does.*—The majority of the dressmakers of Richmond make all kinds of women's and children's garments. A limited number specialize in tailoring but the majority do no tailoring whatever. Three Richmond dressmakers do designing

while the great majority adapt ready made patterns. Five do some shopping for customers, seven specialize in remodeling, one in making furs and two do some millinery work.

After selecting the commercial pattern, necessary adaptations are made usually involving the putting in of tucks, pleats, and sheers, and other provisions for fullness before cutting. The worker pins the pattern on the cloth and cuts it with shears.

Draping consists of placing the cloth on the fitted lining according to the design. The worker must put it on evenly, being sure that the lines are right and that the weave of the cloth is running in the proper direction. Fitting consists of putting the partially completed garment on the customer and making necessary alterations. Shoulder and under-arm seams, if not exactly right are pinned to fit. The hem of the sleeve must be turned back the right width and the belt fitted. The skirt length must be determined, and the skirt fitted and hemmed so that it hangs even from the floor all around.

In shopping, the dressmaker buys cloth according to order, matches fabrics, colors and thread, and selects linings and trimmings. In this connection she must always be on the lookout for new ideas, and new fabrics, and trimmings.

In remodeling, the worker must plan the garment to fit the cloth, rip and press the old garment, and cut and fit according to the new design.

Dressmakers who manage their own business have to meet customers, advise them about designs and materials, keep accounts, render bills, and direct and teach their assistants.

*Special knowledge required.*--The dressmaker should have a thorough knowledge of textiles and what fabrics are in vogue. She should know how to draft patterns, and how to adapt commercial patterns. To really succeed in her business, the dressmaker should be able to design costumes. This involves a knowledge of good lines, color combinations and style, and adaptation of the whole design to the customer and the fabric to be used.

Cutting requires a knowledge of how the cloth of a given width and length will cut to the best advantage, and which way of the weave each piece is to be cut.

Draping requires a special knowledge of how each kind of fabric can be used to the best advantage to get the desired effect. Several different fabrics may be combined in the garment and she must know how to get simple and effective lines no matter what materials are used.

Fitting involves a knowledge of how to alter seams and manipulate the cloth so as to make the garment fit. The worker must know how much fullness there should be, where the fullness should come and how to fold or gather the cloth into shoulder seam and band to obtain the desired effect. She should know what to do to make the needed change, what can be done by lifting or shifting shoulder seams, what by taking in the under-arm seam either on back, front, or both sides, and how the "hang" of the skirt is effected by letting out a side seam or taking in more cloth on the back or front. She should know where the sleeve seam should meet the waist and how to shift it to make the sleeve fit.

Shopping involves not only a knowledge of textiles but of prices. The shopper must know how to match colors. This is more difficult when different textiles are employed, for example, silk linings for wool suits. She must also be familiar with the local stores.

Dressmakers should have a complete enough business education to enable them to properly meet customers, keep accounts, render and collect bills and select and train workers. Salesmanship training would be of distinct advantage.

*Special skill required.*—Skill consists largely of handling fabrics and in the sewing, fitting, and draping of garments. This must be done so that the pieces will be placed neatly and accurately and so they are not mussed or soiled in the process.

*How special knowledge and skill are obtained.*—The technique of machine and hand sewing may be obtained during the course of the work. Helpers receive but little actual instruction in any phase of the work. It is therefore necessary that information about textiles, design, colors, line and form, and cutting and fitting, be obtained, by those wishing to become dressmakers, from school courses taken prior to entering the work or in the evening school after finding employment.

### The Seamstress

*What the worker does.*—Shop and home seamstresses are found in Richmond. The home seamstress works by the day in either her own home or that of her employer. Her work may include shopping, designing, cutting, fitting, sewing, and finishing, but it is limited largely to plain sewing; aprons, housedresses, plain

shirt waists, underwear, and in some cases children's clothes. When the seamstress is employed, the housewife usually does the designing, shopping, and supervising of the work.

*Special knowledge required.*—The seamstress requires the same type of special knowledge as the dressmaker but lesser in degree.

*Special skill required.*—The seamstress must possess the same type of skill as the dressmaker, but as a rule the textiles used are easier to handle, and the fitting is not so exacting. The worker, however, must be neat and accurate.

*How special knowledge and skill may be obtained.*—By working as a helper in a dressmaking establishment many seamstresses have learned the rudimentary technique of garment construction. Information about design, color and textiles cannot be obtained in this manner, but requires school courses. All desiring to become seamstresses should pursue the courses—sewing, designing and garment construction offered in the public schools.

### **SURVEY COMMITTEE RECOMMENDATIONS**

The Survey Committee recommends the establishment of trade extension evening school courses for ladies' tailors, dressmakers and seamstresses.

For the girls who wish to enter these lines of work, the Committee recommends trade preparatory courses sufficiently broad in scope to include the general work required of dressmakers and seamstresses in Richmond.

## CHAPTER XIV

---

### INDUSTRIAL EMPLOYMENT: DRY CLEANING, DYEING AND HAT CLEANING

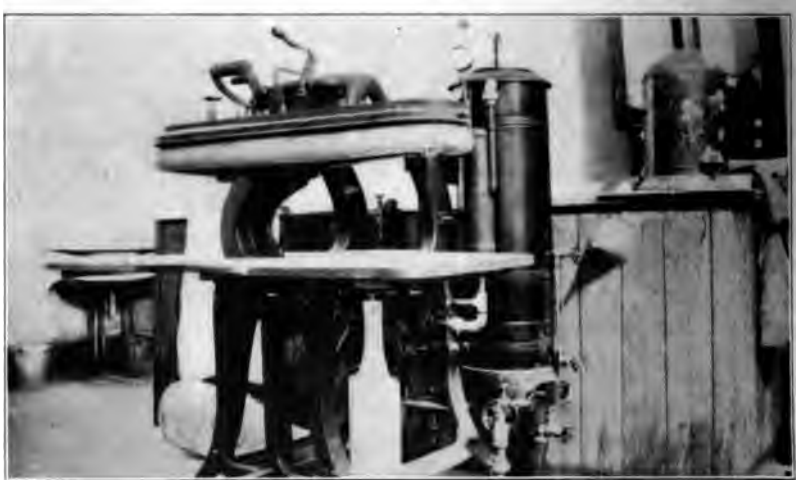
Originating as far back as 1857, in a lovers' quarrel, when a bottle of camphene was spilled on a silk gown, the dry cleaning business has passed through the successive stages of mystery, secret processes and sale of recipe, to the present attitude of scientific research. Its further development depends very largely upon the scientific perfection of the known chemical processes and the discovery of new processes to meet the new demands. At present cleaners are looking for a combination of chemicals which will preserve the color and sizing in a cloth, as in the gasoline bath process, and remove the dirt as in the soap and water process. That such a combination of chemicals is greatly needed, has been shown by the high prices still being paid by the tradesmen for new recipes and chemical combinations.

With the recent introduction of new textiles and new dyeing processes, the cleaner has been forced to meet the demands of his clientele with new methods of his own invention. He is facing the increasing need for new types of tests to determine the kind and quality of fibre used in the different cloths, the methods of dyeing, and other possible chemical processes to which the cloth has been subjected. It is necessary, for instance, that he be able to recognize silks that have been "loaded" with a tin solution and, therefore, cannot be put into certain liquid baths without falling to pieces. Having determined the quality of fibre and chemical processes through which it has passed, there remains the constantly new problem of determining how to remove the dirt and unusual spots in the cloth of different textures.

*Difficulties.*—Of the most serious difficulties which the average cleaner has to meet, that of the ignorance of his patrons in regard to textiles and chemical reactions is by far the most frequent. Housewives bring their unsuccessful attempts to him and expect him to be able to repair the double damage done the cloth. Their judgment regarding the possibility of cleansing a



**Washing Machines, Extractor and Gasoline Pump.**



**A Modern Steam Press.**

given garment is frequently a real hindrance to the cleaner. Their ignorance of the quality and type of texture to be cleaned, and the reactions of chemicals upon it, make it necessary for the workman not only to recognize the conditions himself, but to be able to explain in detail to his patrons the action of the chemicals involved and the possible results to the cloth.

On the other hand, the public, due to its ignorance, must accept wholly on faith the statements of the cleaner, and it is upon this faith in the individual cleaner that the success of the business is based. Successful work brings patrons, but one of the most frequent methods of gaining the confidence of the public is that of cleaning gloves at a loss in order to acquire public attention.



Dry Cleaning Must Be Carried on in a Fire Proof Building as Illustrated by the Above Concrete Structure.

The difficulties arising from shoddy fabrics and poor dyes have been multiplied many fold by the war conditions. The excellence of foreign fabrics have given place to shoddy, short-stapled materials, or mixtures which confuse even the wide awake cleaner and render uncertain the reaction of any given chemical upon it. The clear uniform dyes of Europe have been supplanted by inferior American-made dyes, which render uncertain the



reaction of any chemical upon the color of a fabric. Added to these uncertainties are the possibilities of "loaded" materials, and new materials with which the cleaner has not yet had a sufficient experience to enable him to correctly judge their possibilities.

Another serious difficulty with which the cleaner must deal lies within the trade itself and arises from the inferior workmanship of a great number of pseudo cleaners who pose as dry cleaners but who do only pressing and spotting. A creditable dry cleaner must face the problem of establishing a thoroughly good reputation not only among the people of his own community, but among his fellow tradesmen of other communities so that they will send their difficult problems to him and refer other friends to his establishment.

*Scope.*—In Richmond the dry cleaning business as now constituted is less than fifteen years old and employs 36 persons. The local scope of the business includes the cleaning of suits, coats, waists, fine dresses, gloves, shoes and furs for ladies; suits, overcoats, fancy vests, etc., for men, and in addition such house furnishings as rugs, carpets and fine portiers. Marked changes in style frequently affect their trade, as is shown this season in the popularity of light colored ladies' shoes which has necessitated the invention of new methods of cleaning leather. The dry cleaners frequently wash the garments as the laundry does, but, due to their greater skill and experience in handling fine textiles, they are able to produce better results. The work of the dry cleaner in some cases overlaps that of the regular laundry but in the main is concerned only with the finer cotton garments and the silk and woolen garments.

Aside from the local scope of the cleaner, each establishment receives work from out of town. Some Richmond cleaners have work sent them from Massachusetts, Pennsylvania and other states, where fellow tradesmen or former patrons reside.

Four or five Richmond concerns do dyeing. Hat cleaning is a separate business in Richmond but is so closely allied that it will be considered in this Chapter. In some instances it is carried on in shoe-shining parlors and barber shops.

*Organization.*—The departments in dry cleaning establishments are: The office, the cleaning department, the pressing department and the delivery department. Spotting may be a department in itself or included in the cleaning department.

Dyeing if done at all, is another department. Hat cleaning in Richmond is not organized on a departmental basis.

### Occupations and Number Employed

	Males	Females
Proprietors*.....	11	1
Office force*.....	..	4
Cleaners.....	2	..
Pressers.....	7	1
Delivery force.....	4	..
	—	—
Total.....	24	6

### Facts Common to All Workers

*Mental and physical requirements.*—Ordinary health and strength are required. Pressers should not be under weight because of the pressure required on the iron and steam press. Some of the steam presses are constructed with such a leverage that a weight of 150 pounds on the treadle will exert a pressure of 600 pounds on the press. The deliveryman, office girl and manager should dress neatly and be able to pleasantly meet customers. The manager needs executive and business ability.

*General education required.*—Office girls and deliverymen should know how to read, write and figure. Cleaners should be able to read the trade journals intelligently. Employers state that all employees should have an elementary education and that high school graduates are preferred.

*Promotion.*—Assistants pressers may be promoted to regular pressers. Pressers may be promoted to cleaners or spotters. In the smaller establishments the only prospect of advancement open to any employee is that of leaving the establishment and setting up a business for himself, which is not an unusual occurrence.

*Source and selection of workers.*—Cleaners and spotters may be secured by promoting pressers or by writing to some of the trade journals. There are a considerable number of transient cleaners who go from town to town much as the itinerant printer used to do. Workers apply in person and are tried out on the job.

\*Proprietors and office force are here listed because they take part in the cleaning processes.

Married men are preferred because they are steadier and take their work more seriously. Employers occasionally advertise for help, but state that workers obtained in this way are seldom satisfactory. There seems to be a prejudice, among women especially, against dry cleaning work as compared with factory work.

*Seasonableness and overtime.*—The regular working day is eight hours. In dull seasons, cleaners and pressers leave when the work is done, which is often early in the afternoon. The busiest seasons are just before Easter and in the fall before cold weather necessitates heavy clothing. Work keeps up steadily during spring and summer but the volume fluctuates somewhat according to the weather. The first warm spring days mean a deluge of work for the cleaner. A cold rainy week means slack work. Overtime work is necessary during rush season and the working force may be increased one-third.

### **The Proprietor or Manager**

*What the worker does.* The proprietor oversees all the work, employs workers, buys materials and machinery, keeps the books and does the advertising. He exclusively manages the business. He may teach workers and must study trade journals for new methods.

*Special knowledge required.* The proprietor should know something of each cleaning and pressing process and the essence of general business management. He should be able to efficiently route the work and know the production to expect from each machine and worker. Unless he can employ a competent spotter and cleaner, he must be an expert in applied chemistry, dyes and textiles. The trade journals answer questions and publish recipes and formulas which he must know how to read and interpret correctly.

*Special skill required.*—The skill required is the same as that of the most expert workers employed.

*How special knowledge and skill are obtained.*—The present methods of obtaining the necessary knowledge and skill are: (1) By experience on the job, either previously in any of the cleaning departments, or through business experience in a custom tailor's shop; (2) by study of trade journals; and (3) by purchas-

ing special recipes. The basic theories of chemistry, dyes and textiles, which, in this business have an actual cash value, can not be adequately obtained in any of these ways but must be gotten by study directed by a thoroughly trained teacher.

### The Office Girl

*What the worker does: Office work.*—The office duties consist of answering the telephone, occasionally writing letters, keeping the day book, receiving work brought to the office by customers, giving out work called for and answering complaints. She receives payment for bills, quotes prices, and tells customers whether the work they bring in can be done satisfactorily.

*What the worker does: Cleaning work.*—Her cleaning work corresponds to the marker and sorter in the laundry. On each garment she fastens a tag which she marks with the owner's name and a mark showing whether work is to be called for or delivered. When the finished work comes to her she assembles all articles belonging to one person and separates work to be called for from work to be delivered. She folds and wraps garments ready for delivery. There is a special way of folding each kind of garment. Tissue paper is used to keep the garment as fresh as possible. Most garments are sent out in pasteboard boxes which come ready cut but have to be erected for use. Some establishments send out many articles without wrapping. Gloves are placed and sealed in tissue paper envelopes or folders. The office worker may help with the pressing and sometimes with the spotting.

*Special knowledge required: Office work.*—The worker should have slight knowledge of bookkeeping and forms for business letters. She must know prices and be able to figure discounts. She must know how to receipt bills. She should have sufficient knowledge of the process of cleaning to enable her to explain to customers about garment cleaning and dyeing. An acquaintance with the patrons of the establishment is desirable.

*Special knowledge required: Cleaning work.*—The worker should know the marking and sorting system thoroughly so that no mistake will be made in sending garments to the wrong person or failing to have a garment delivered because she thought it was to be called for. She must know how to bundle each kind of garment handled for delivery. This involves knowing how to fold a garment and the special box or folder for it. She should

know fabrics and dyes in order to know what work to accept, what cannot be done at all and what should be accepted without a guarantee. She should know how to do pressing and spotting.

*Special skill required.*—Little special skill is required except for pressing and spotting.

*How special knowledge and skill are obtained.*—Special knowledge and skill are acquired by instruction from the proprietor and by experience.

*Hazards and inherent character of work.*—The only dangers peculiar to the office work are those incident to handling the soiled clothing. Dangers from infection or contagion are probably very slight because no garments are collected from placarded houses and most of those handled are outer garments. Offices are well lighted and ventilated.

*Wages.*—Weekly wages vary from six to twelve dollars.

### The Cleaner

*What the worker does.*—After the clothes are marked they are taken to the cleaning room. The cleaner sorts them considering weight, color and material. Heavy suits and overcoats, medium weight clothing and fine clothing are separated. Cotton lined garments are separated from silk lined. Very light colored garments are put together, but beyond this little attention is paid to color. These lots are kept separate through each of the cleaning processes.

The worker then places one lot of clothing in the dust wheel. The dust wheel is a large cylinder six to ten feet in diameter and from two to six feet wide. It consists of a wooden frame covered with wire netting with slats about one-half inch wide and one inch apart. The worker fills it about one-fourth full of clothing, closes and then starts it. The wheel revolves slowly, tumbling the clothing so that the dust is shaken out and the fabric loosened but not torn or strained.

The clothes are then placed in the washing machine which consists of a perforated wooden cylinder about three feet in diameter revolving in a zinc containing cylinder. There are five or six horizontal wooden ridges projecting about two inches into the inner cylinder. Another type of machine may be used in which the inner cylinder is made of round staves two inches in diameter.

The inside surface resembles a wash board. A "pony" washer with cylinder about two feet in diameter is sometimes used for delicate fabrics. The machine is filled with "oil" up to about three or four inches from the bottom of the perforated cylinder and benzine soap is put in. Sometimes the worker lets the "oil" stand a while with chamois skin or a bag of salt in it to remove moisture. Then the worker puts in the clothing. He must put in enough "oil" so that the clothing will not be carried up to the top by the revolution of the cylinder, but will stay in the bottom and be gently rubbed by the horizontal bars or staves. If he puts in too much clothing, it will not wash properly and is likely to catch on fire.

The worker starts the machine by pulling the control lever. The inner cylinder revolves slowly and reverses every three or four revolutions. The clothes "run" 30 to 40 minutes. Then the "oil" is drained off by opening a faucet or pulling a lever and the machine filled again. Then the clothes are rinsed about half an hour.

After the articles have been washed and rinsed they are taken out of the washing machine and put into the extractor. This is a perforated cylinder or "basket" which revolves within a container or "curb" with such speed that the liquid is forced out of the clothes through the perforations by centrifugal force.

The clothes are taken from the extractor and dried either in the drying room or in the drying tumbler. Heavy clothing and clothing that has perishable or breakable buttons is dried in the tumbler. The tumbler is a wire net or perforated copper cylinder which revolves slowly in a container through which heated air passes. The worker puts the clothing in the tumbler, closes the machine and starts it by throwing a lever. He must stop the machine and take out the garments when they are dried and the odor of the cleansing chemicals evaporated. Other clothes are placed on hangers and hung in the dry room, a closet heated by steam coils. Most dry rooms are ventilated by an exhaust fan.

The gasoline is purified by distillation and used over and over again. In fact distilled gasoline is better than new because the soap remains in it. The gasoline is drained from the machines into a tank connected with the distiller. The worker turns a controller which exhausts the air in the still and so draws the gasoline from the storage tank into it. When the still is about full he turns on the steam, the gasoline boils, and the vapor passes

through a pipe coiled in a cold water tank. This condenses the vapor and allows it to run out as a liquid into another container.

The greatest bulk of the clothing goes through the regular process but special methods have to be used for some articles. Kid gloves may be washed on a large tray full of gasoline where they are scrubbed by hand with gasoline soap and scoured with pumice. Perspiration stains cannot be taken out but the pumice helps to renew the surface temporarily. Occasionally they find colored gloves and shoes which fade because a dye has been used which is dissolved by the oil. Gloves may be cleaned by putting them in a small tank filled with "oil" in which there are three revolving brushes. The worker, after putting the gloves in the machine, leaves them there until they have been washed and rinsed. A more modern machine is so constructed that the gloves are churned between brushes and do not come into contact with wood or metal.

White furs have to be especially handled. Plumes must be handled very carefully and dried quickly. Most of these articles are dyed with the gasoline dye which fades very easily. Shoes are treated much as are gloves but they are more difficult because they are usually more soiled. The glue which holds the heel covering may be loosened by the "oil" or heat of the drying room. Garments with perishable buttons have to be handled carefully or else buttons must be taken off. Some garments, such as fine cotton waists, very badly soiled articles and rubber coats, may be better cleaned by soap and water. Rubberized coats cannot be dry cleaned successfully because gasoline tends to dissolve the rubber. In this case they are washed out by hand and rinsed in warm water.

In Richmond the cleaner also does the dyeing. Very little is done at present. When articles are to be dyed they are first "stripped" by putting them into a chlorine solution which neutralizes any dye which may be in the article. Hydraldite may be used for stripping. It depends upon what dye is in the cloth. Then the garment is put in a soda solution which softens the fibre and which prevents the dye from hardening the fabric. After this the process varies minutely according to the kind of dye and the kind of textile.

Dye is dissolved in a small container and then put in a large vat. There are usually three or four different vats for "staple" colors. Vats are filled with salt water. The water is not changed

until it gets sour, which may be several weeks. In dyeing the steam is turned into the vats and the liquid brought to the boiling point. Then the cloth to be dyed is put in and the boiling continued thirty or forty-five minutes or until the water looks clear of dye. The cloth is taken out and rinsed in clear water, then in a very weak solution of salt or acetic acid to eliminate the loose dye or "set" the color. They are dried and pressed in the usual manner. Odd colors are dyed in a small container and the liquor is not kept from one time to another.

The cleaner may do some of the work of spotting or pressing.

*Special knowledge required.*—The cleaner should know something of chemistry and textiles. A knowledge of textiles is necessary in order to be able to sort for the machine. He should know how to handle the "oil" and the soap used, which is a compound of ether, ammonia, chloroform, cottonseed oil, petrolatum, benzine and stearic acid. Soap is used more on heavy, badly soiled articles and on the delicate fabrics which will not stand much manipulation. The cleaner must recognize the textiles which will clean best in soap and water, such as fine cotton waists and rubber coats, and must also know in that case what kind of soap to use and the reactions of soaps, softeners and the temperature of the water on the fabrics. He must know how each dye will react in the cleaning process. This fundamental knowledge of chemicals, dye and textiles is needed because the cleaner's work can never be reduced entirely to routine. New fabrics and dyes are continually presenting themselves and he should have the basic knowledge which will enable him to adapt his methods to these new materials.

The cleaner should know how to operate the machines in use; how to clean and oil them and make minor repairs.

Dyeing requires even more intimate knowledge of textiles and dyes. In regard to dyeing, the cleaner must know "what the clothing will do," as for instance, whether a brown article can be dyed red. He must know fabrics very well and know what dyes to use to obtain the desired color in the particular garment. It is also necessary that he should know intimately the process to be used for each kind of dye and fabric. Owing to the present scarcity of dyes only the commonest and highly standardized are now used. The union dyes in general use do away with the necessity of using different dyes for silk, wool or cotton. The prob-



lem is to use a process which will leave the fabric unimpaired for silks must not lose their brilliancy and wools must not be allowed to "felt."

*Special skill required.*—There is no special skill required beyond that of handling the fabrics carefully and quickly, and managing the machines easily and accurately.

*How special knowledge and skill are obtained.*—Special knowledge and skill are acquired by instruction from the foreman. Employers state that the best cleaners are usually immigrants who have learned the trade abroad through an apprenticeship varying from three to seven years. The basic courses in chemistry, dyes and textiles must be obtained in school or by reading.

*Hazards and inherent character of work.*—Although the work is not difficult, there is some danger from the gasoline fumes. It occasionally makes people actually sick. They stagger and become nauseated. The first symptom is usually to step too high. A few minutes in the open air revives them unless they are so badly affected as to need an air pulmotor. Workers become used to the fumes to some extent, but must always be careful to go into the air for a few minutes at the first symptom of dizziness. If they do not so refresh the lungs immediately, they may faint or become seriously ill. Gasoline may make the hands very rough and cause them to crack.

Workers must be very careful in handling combustible chemicals. There must be no fire in the workroom. The washing machines must be closed carefully so that there will be no sparks when the metal bindings strike. There is danger of inflammation too, if too much clothing or too little naphtha is put into the machine. The manipulation of the fabric produces static electricity and the sparks set the gasoline on fire instantly.

*Wages.*—Wages vary from sixteen to twenty dollars a week.

### The Spotter

*What the worker does.*—Garments are passed from the dry room to the spotter who discovers and removes spots or stains. He places the garment on a table or a glass-covered board shaped like an ironing board, and applies the chemical with a piece of cloth, sponge or brush.

*Special knowledge required.*—The spotter should know the chemicals used for cleaning and their specific reactions on any kind of dye or textile. He must know textiles and be able to recognize the kind of dyes used on each; how to recognize the cause of any spot or stain and also know what chemical may be used to take it out without injuring the texture or color of the fabric. One Richmond man said he used "about all the chemicals for sale in the drug stores and a few more." A spotting cabinet advertised in one of the trade journals contains 24 liquid and 8 dry chemicals. Some of those in common use are chloroform, carbon tetra chloride, alcohol, sulphurous acid, ether and benzol. Much of the work becomes routine in a short time but fundamental knowledge is needed to meet new problems which arise constantly. New spots, new fabrics and new kinds of dyes.

*Special skill required.*—Skill is required in handling garments quickly and carefully, and in applying the chemicals. The spot must not be rubbed at all but the chemical must be pressed and patted into the spot.

*How special knowledge and skill are obtained.*—Many of the spotters are immigrants who have learned the trade as apprentices in the old country. Some spotters have taken school work in chemistry. Others acquire information by reading trade journals. Technical education about garment construction, dyes and chemicals is a marketable asset.

*Hazards and inherent character of work.*—The worker stands most of the time and bends over the cleaning table. Lighting in most establishments is partly natural and partly artificial. There is some danger from the chemicals used, although they are diluted from ninety to thirty per cent. The carbolic and sulphurous acids have to be used very carefully, also the wood alcohol and the chloride. There is danger of combustion from the naphtha fumes.

*Wages.*—Wages range from eighteen to twenty dollars a week.

### The Presser

*What the worker does.*—The worker presses and irons garments which have been cleaned and dried. A limited number of garments come just to be pressed and do not go through the cleaning

process. The worker does a good deal of the work by the old fashioned hand iron and tailor's goose. Dresses and fine waists are done in this way.

For coats and suits the power press may be used, or they may be done with the goose. This consists of a padded board of "buck" about one foot wide and three feet long. A steam-heated padded iron the same size is so adjusted that it may be brought down over it. The process varies for each kind of garment.

The steam press is operated by putting the garments on the press pad and then bringing down the padded buck on it by means of a foot lever. There are two types of presses; in one the heat comes from below, and in the other, from above. The former is used for heavy garments and the latter for light garments. Trousers are pressed as follows: Worker lays the trousers on the pressing board, smooths them out so the crease will come in the proper place, then lays one leg back and pulls down by hand the upper pad; he then turns on the steam by a lever, and presses a foot treadle which supplies the necessary weight. He releases the treadle, smooths the garment with a small "paddle" to keep in the steam and repeats the operation a couple of times. The other trouser leg is pressed the same way.

Gloves are pressed on a hand shaped metal form. The worker puts the glove on the form, smooths it down and presses a thin pronged instrument between the fingers. Then the gloves are taken off, folded and put in the folder ready for delivery.

One man, besides doing regular pressing work, repairs and remodels clothing. This consists of sewing on buttons, shortening or lengthening trousers and coat sleeves and in repairing frayed edges.

If women are employed for this work, they press the waists, dresses and gloves.

*Special knowledge required.*—The worker must know what effect the pressing process will have on each kind of textile handled. For instance, there is a special kind of serge in common use which wrinkles when it is dampened by steam. The degree of heat to be used varies according to the kind of fabric.

He must also know something about tailoring. It is not necessary that he should be a tailor, but he must know how the garments are made in order to know how to press them and where the creases, if any, should come.

Besides knowledge of pressing, the repairman should know

how to make repairs and to remodel garments. In the tailoring business he is known as a "bushel man." He must also be able to distinguish textiles and fabrics.

*Special skill required.*—The skill involved in manipulating the iron and in keeping the garment smooth and in preventing scorches, is considerable. It varies according to the textile and garment. The repairman in addition must be skillful in sewing.

*How special knowledge and skill are obtained.*—Special knowledge and skill are acquired by experience on the job or by experience as a tailor, gained usually by some type of apprenticeship.

*Hazards and inherent character of work.*—The worker stands at his work. There is necessarily a good deal of heat and steam given off by the irons and presses. In operating the power press it is necessary for the worker to put his whole weight on the foot treadle. Lighting is partly natural, partly artificial.

*Wages.*—Wages vary from six dollars per week for beginners to twelve dollars for experienced workers.

### The Deliveryman

*What the worker does.*—This worker collects garments which patrons wish to have called for and delivers finished work. He may use either a horse or a machine.

He plans to make two trips each day in each direction. Unless an emergency call comes, he makes deliveries and collects on the same trip. He gets from the book in the office a list of the work to be called for and work to be delivered and plans his route accordingly.

He collects payment for articles delivered.

*Special knowledge required.*—The deliveryman must know the town well and know how to run a car or drive a horse and should know the cleaning process in order to make explanations to customers and tell what can be done successfully. An acquaintance with the patrons of the establishment is helpful.

He should be able to quote prices and exercise judgment in the extension of credit. He does some of the collecting and must keep some simple accounts.

*Special skill required.*—No special skill is required beyond that needed in managing the machine or horse. He must handle unwrapped garments carefully so they are not mussed or soiled.

*Hazards and inherent character of work.*—The driver has to be out in all kinds of weather. However the busy season comes during spring, summer and fall.

*Wages.*—Wages are approximately twelve dollars a week.

### The Hat Cleaner

*What the worker does.*—The worker first takes all trimmings off the hat. Ladies' hats which are made with crown and brim separate are taken apart. Some cleaners also take off the bands.

Cloth or felt hats are cleaned as follows: He scrubs the hat carefully in gasoline and then places it in a heated room to dry. Hats may be dried on a "spinner," a machine somewhat like an electric fan which whirls them rapidly. He selects the block and flange which are of the required shape and size. He takes the hat from the dry room, pulls the crown over the block, fastens the block on a machine. He starts the machine which turns the block. As it turns a heated iron is brought next to the crown near the brim and slowly moves inward as the block revolves.

The worker then takes the hat from the block and puts it on the flange, a board shaped to the brim with a hole in the middle which lets the crown through. A heavy piece of outing flannel is put soft side down over the brim. The worker fastens it down firmly by tying around the edge of the flange with a cord. The brim is sponged and ironed through the outing flannel. This gives shape to the brim. If the hat brim is of such an unusual shape that there is no flange to fit it, it must be ironed by hand. The "curling" irons used are specially shaped, small with one concave edge.

The hat is then retrimmed. The band is put on by hand. The binding on the edge is first sewed on by hand, then turned over and stitched down with the machine.

Panama hats and straw hats go through much the same process. They are scrubbed in some cleaning solution, gasoline or warm suds and rinsed. They are bleached by sulphur fumes or in a bath of diluted sulphuric or oxalic acid. They may be bleached by putting on a coat of sulphur in paste and brushing off the powder after drying. Straw hats are preferably dried in the sun. The hats are blocked, flanged and retrimmed.

If a hat is to be made to order, the worker gets the felt hat shape

after it has been smoothed. The brim is trimmed by cutting it to a circular form. The hat is blocked and smoothed again by putting the blocked hat on a lathe. While the crown is turning, the outer surface is smoothed down by pressing it with a piece of glass paper. Then the leather lining is put in and the hat is trimmed.

*Special knowledge required.*—The hat cleaner should know the chemicals used in hat cleaning and the reaction of each to the textiles used in hat making. He should know, too, the reaction of each chemical on the special textile in hand. He should know the different cleaning processes for each kind of a hat.

He should know something of the hat making process in order to handle the hats properly in cleaning, and put on bands and trimmings. This knowledge is of course essential to hat making.

*Special skill required.*—In flanging the hats a good deal of skill is required. This is especially true if the regular flange can not be used and the process must be done with an iron on a flat table. Smoothing the hats in hat making requires a light even touch.

*How special knowledge and skill are obtained.*—Cleaning hats may be learned by experience in a hat factory or cleaning establishment, or by instructions from a skilled worker. The underlying chemistry could best be obtained in the school.

*Hazards and inherent character of work.*—The dangers involved are similar to the cleaner's, incident to the use of gasoline.

### SURVEY COMMITTEE RECOMMENDATIONS

The dry cleaning and hat cleaning industries of Richmond, although giving employment to relatively few workers, are of increasing importance to the community. The successful pursuit of these lines of work depend upon workers having a knowledge of fabrics, their kinds, weaves and dyes; a knowledge of garment construction, and a knowledge of chemistry. While all workers in these industries would be more efficient with this knowledge, it is of prime importance to proprietors, cleaners and spotters. These workers comprise about one-half of all in these industries in Richmond.

The field in Richmond is not sufficiently large to justify the establishment of trade preparatory courses on an all-day basis for those who wish to enter these cleaning industries. The Survey

Committee, however, indicates that these industries require an accurate knowledge of fabrics, dyes, a general knowledge of garment construction, and chemistry, and that these basic elements of the trade could be efficiently taught in a day vocational school. In fact, the development of these lines of work depend largely upon some adequate scheme for training new workers.

The proprietors, cleaners and spotters in Richmond need day part time or evening trade extension courses in textiles, garment construction, dyes and chemistry. This is clearly a need which cannot be met locally by the Board of Education, because of the difficulty of obtaining a well trained teacher. Such a teacher is not here available. All other Indiana cities are facing the same need and problem. The Survey Committee calls the attention of the Extension Divisions of Indiana and Purdue Universities to this need, with the recommendation that a well trained chemist with experience as a dry cleaner be employed to give courses on a trade extension short unit basis to workers in these fields in Richmond and other Indiana cities. Such courses should be given in the winter during the dull season.

## CHAPTER XV

---

### INDUSTRIAL EMPLOYMENT: THE LAUNDRY

There are two steam laundries in Richmond, employing 39 workers. There are also three Chinese laundries, not studied by the Survey, nor listed in the table of employees.

Besides the commercial laundries in Richmond, institutions in and near Richmond employ five males and nineteen females in laundry work. In general, women are employed for marking and sorting, starching, drying and ironing; and men are employed for washing and delivering.

Although laundry agencies collect work from a distance, the industry is, because of the nature of the work, local to each community. The laundryman of the small town has the handicap of a small plant and frequently inferior equipment. Furthermore, his most serious competition is from the housewives and independent washerwomen, rather than the more stimulating competition of other laundries. No other business competes with its own patrons in the sense in which the laundry does. The fact that the work done in Richmond consists so largely of hotel and restaurant work and of shirts and collars, goes to show that the steam laundry has not yet convinced the housewife that this way of doing her work is the best and the cheapest.

*Laundry routine.*—The laundry consists of four departments: The office, the laundry proper, the engine room and the delivery department. The business of the establishment is carried on in the office. This work is discussed in Chapter XIX. One laundry buys power from the city and so has no engine room. The other has an engine and boiler room. The sub-departments of the laundry proper follow the well-known washing processes: Sorting and marking, washing, starching, drying and ironing. Richmond laundries do bed and table linens, general family work, men's and women's wear, and rough dry work, which is delivered without being ironed.



**Occupations and Number Employed**

	Males	Females
Proprietors (not analyzed) .....	2	..
Office workers (see Chapter XIX) .....	..	2
Foremen .....	2	..
Markers and sorters .....	3	2
Washers .....	2	..
Starchers .....	..	2
Machine ironers .....	..	17
Hand ironers .....	..	3
Delivery service .....	4	..
	—	—
Total .....	13	26

**Facts Common to All Workers**

*Mental and physical requirements.*—Ordinary health and strength is required of all workers. The foreman must possess managerial and executive ability. The foreman, office girl and delivery boy should be able to meet customers agreeably. The work of washing is usually considered too heavy for women. The washerman should have the type of attention which will enable him to keep six or eight machines going at once. Marking and sorting require accuracy, good memory and a power of quick localization similar in kind to that of the mail clerk. For the ironing work, girls of large physique are necessary to operate the bosom press, the sleeve ironer and the body ironer.

*General education required.*—Education beyond the elementary school is not necessary. Deliverymen, markers and sorters should be able to read, write and count. Employers give preference to applicants who have at least an elementary education because they say they learn the work more quickly and execute orders more intelligently.

*Promotion.*—Women workers may start at any job but the usual starting point is at the flat work ironer, cuff press, yoke press or neck band press. Then they may be shifted to collar ironing, body ironing, sleeve ironing or the bosom press, but this means only very slight increase in wage. Girls may be promoted from the ironing department to the marking and sorting department and from there to the office or to foreman's assistant. Men may enter as washermen, deliverymen, markers and sorters, or collar

ironers. They may be promoted to foremen. All promotion depends on education, knowledge of the business, general intelligence and available openings.

*Source and selection of workers.*—Many of the girls employed have been in the work for years. A considerable number are married women who have gained some idea of laundry work by home experience, but some girls are employed who have had no previous experience. From among applicants the employer selects help on the basis of age, experience, education and general personal fitness, and tries them out on the job. The law prohibits girls under sixteen from working at the laundry machines. Employers prefer workers over eighteen years of age.

*Seasonableness and overtime.*—The regular working day is from seven in the morning to five at night, with an hour off at noon and no work Saturday afternoon. Little overtime is required. Monday and Tuesday are busy days for the washermen and Thursday and Friday are busy days for all workers. The volume of work varies little from season to season. In July and August the work is slack as this is the vacation period and many people are out of the city. Workers have no regular vacation but may "get off" for a few weeks during the year unless pressure of work prevents. The amount of business varies from year to year according to the prevailing styles in dress as is shown this year by the fuller skirts worn and consequent increase in business.

*Hazards and inherent character of work.*—The hazards of laundry work have been fully discussed in Bulletin Number 122 of the United States Bureau of Labor Statistics entitled, "Employment of Women in Power Laundries in Milwaukee." The most obvious danger is that incident to handling soiled clothing. Workers themselves are indifferent to this danger. There are no statistics of the number of cases of infection thus caused. Bundles are not collected from placarded houses and suspicious bundles are put into the wash without sorting. Care in washing hands before eating and bandaging skin abrasions would reduce the danger of infection to a minimum.

The chemicals used in bleaching may cause sore hands. The excessive use of chemicals and lack of care in rinsing, leaves some of the bleach in the fabric. When this is vaporized in the ironing processes, it irritates the eyes and nose of the worker. Exact

measurement of the chemicals and adequate rinsing would not only remove this danger, but would also preserve the fabric of the garment. In the washing and starching process, water is splashed from the machines on to the floors which should be constructed so that this will be drained off as quickly as possible. Even with this precaution the floors will be wet much of the time and constitute a hazard to the workers.

The humidity is always high in a laundry because of the steam given off by the washing and ironing machines and presses. While this is not injurious to health unless excessive, nothing less than forced ventilation is adequate.

All of the workers stand at their work. The operation of the treadle and the presses involve some back strain. This is much greater in operating the presses of the older type which require the exertion of almost the entire weight of the worker on the treadle. Back strain is also to be noted in the work of the hand ironers who bend over the ironing boards. These workers also may suffer from the overheating of the hands due to holding the iron.

The danger from laundry machinery is not great, provided safety appliances are used and belts and gearings properly guarded. Extractors should have lids which will not open when the machine is in motion. The mangles and presses should be so guarded that the worker cannot get her fingers between the rolls or in the press.

It is apparent that there are few hazards inherent to the industry which cannot be overcome by proper instruction of the workers. Careful measurement of chemicals, modern equipment, forced ventilation and buildings adapted to the needs of the work, would reduce the inherent hazard to minimum.

### **The Office Worker**

For the analysis of this worker, see Chapter XIX, "Telephone Service."

### **The Foreman**

*What the worker does.*—The foreman manages the concern, oversees the other workers, and employs and teaches new workers. He works out time-saving methods to reduce cost and improve the product. He makes the starch and soap. Starch may be bought ready mixed or the foreman may purchase the corn and wheat

starch separately and mix them according to his own formula or by directions furnished by the company from which starch is purchased. Soap is purchased in chip form and must be dissolved in boiling water. The foreman usually works out the formula for washing each kind of fabric. He has charge of the buying of supplies. He may operate any machine. He must be able to make minor adjustments and repairs and help to install new machines. He may also be proprietor and business manager.

*Special knowledge required.*—The foreman must know how to operate any machine in the laundry. He must know how to manage the workers under him, judge ability of applicants, teach new workmen and make promotions. He must know how to route the work efficiently and get work out on time. He must know where to secure the chemicals and machinery used. He must know not only the operation of each machine but also its productive value. He must know the washing process thoroughly and understand the use of bleaches, soaps and blueing as applied to each kind of fabric. This involves a knowledge of chemistry, dyes, and textiles. He must know the formulas for making soap and starch.

*Special skill required.*—Beyond the skill required by the other workers, the foreman should be able to adjust the pads and aprons of all machines.

*How special knowledge and skill are obtained.*—The foreman obtains his knowledge and skill by previous experience as washerman or deliveryman and by study of trade journals and laundry machine catalogs. Knowledge of applied chemistry and textiles should be acquired in school.

### The Marker and Sorter

*What the worker does: Listing.*—The worker opens the bundle of clothing as it is brought in and marks on the familiar laundry blank the number and kind of articles it contains. Different colored blanks are used for different classes of work: White for general, and blue for rough-dry, etc. If a list comes with the bundle, she verifies this list.

*What the worker does: Marking.*—The worker marks unmarked articles. No special marking system is used. The marker affixes the owner's name, if this is practical; and, if not, she uses either

an abbreviation or a symbol. The mark which is affixed on the clothing is also entered on the list. For each kind of garment there is a special place for the mark: For example, shirts are marked in the middle of the neck band and shirt waists on the bottom of the front facing. This protects the garment and facilitates the work of sorting.

Most of the work is marked on a machine which consists of a roll of type set by keys. The operator presses the figure or letters in the order she wishes to use them (as in using an adding machine), places the article to be marked over a plate, brings down a frame over the plate which holds the cloth firm, then presses a foot treadle which brings the type roll down on the fabric. Releasing the treadle stops the machine and pulling another lever brings the type back to its original position on the roll. Collars and shirts are marked by hand with pen and ink. The mark is put on with a down stroke of the pen. It must be legible. Stockings and other articles not subject to the above methods are marked by attaching a tin marker on which is recorded the name or symbol.

Rough-dry work is marked with numbered pins. A rack holding thirty pins bearing the same number, is used for each separate bundle. A pin, similar to a safety pin, is attached to each article. There is a special place for the pin on each kind of garment so the garment is not injured and no time is lost in sorting. This leaves as many vacancies in the rack as there are articles in the bundle. When the articles are sorted into the original bundles after washing, the pins are taken out and returned to the rack. The worker knows that the bundle is not completed until the rack is filled.

The marker sorts the clothing roughly according to color and kind of textile, and garment.

*What the worker does: Sorting.*—Sorting is the process of assembling the work into the original bundles when the washing and ironing is complete. Rough dry work is sorted as follows: There is a rectangle closed on three sides and a half by a rack about shoulder height. On this rack there are pegs about a foot apart and about a foot long. Each peg is numbered. The worker takes an article of clothing from the basket and slips the pin, which is attached to it, over the peg which bears the same number as the pin. In this way all the clothing which bears the same number and belongs to the same bundle, is hung on the same peg.

If there is also some flat work in the bundle, this is indicated by the list. The sorter takes off the pins and returns them to the rack. If the bundle is entirely rough-dry work, she ties it up ready for delivery; if not, she passes it on to the next table where it is combined with the finished work.

The section devoted to the sorting of finished work is arranged with shelves. The laundry marks are chalked, about a foot apart, on the shelves. The worker takes the articles as they come from the ironing processes, and places each article on the shelf over the mark corresponding to the mark on the article.

Large bundles of laundry from hotels and restaurants are not mixed with other bundles. No sorting is necessary, but the worker must count the articles and check them with the list.

Before the sorter ties up any bundle, she must check the original list to see that nothing is missing. Each bundle is wrapped for delivery with the list on the outside. The details of the process may vary. Workers usually specialize on some one kind of work, such as, flat work, rough-dry, collars and shirts, or general work.

*Special knowledge required.*—Marking requires knowledge of the marking system and how and where to affix the mark. It is an advantage for the worker to know the names and corresponding marks of the laundry's regular patrons. She must know the sorting system. Inaccuracy and lack of knowledge of the system, result in errors which may cost the business, not only money, but loss of patronage.

*Special skill required.*—Special skill consists in affixing the pen marks so they are not blurred and in speed for each detail of each process.

*Wages.*—Weekly wages range from six to eight dollars.

### The Washerman

The next process after marking and listing is washing. The washing machine consists of a perforated wooden cylinder about four feet long and three feet in diameter with several horizontal ridges, revolving in a containing cylinder. The direction is reversed with every two or three revolutions. The machine is connected with three pipes; hot water, cold water and steam, respectively. The machine is started and stopped by a control lever. It is drained by pressing a foot treadle. The worker cleans and operates the machine. All repairs are made by the engineer

or foreman. The washer loads his machine with articles of about the same kind, sorted on the basis of color, textile and the degree which they are soiled. He tries to remove the stains before putting them in the washer. The formulas are usually furnished by the foreman. Each lot goes through about seven processes. The first bath is cold water; then the washerman turns on the steam, puts in the softener and the soap, and runs the machine for twenty or thirty minutes. The clothes are then rinsed and put through another "suds," after which they are rinsed two or three times. Blueing and sometimes an oxalic acid or acetic bleach is used in one rinse water. The process varies for different "loads" in the kind and amount of chemical, temperature of water, and length of bath. Flannels and silks must be washed with special care. Some very delicate articles are washed by hand in the old fashioned way. One man may tend from four to eight washing machines.

The washer takes the clothing from the machine and packs it in an extractor, the laundry substitute for the wringer. This consists of an upright perforated cylinder or "basket," within a solid container or "crib." The basket revolves at about 1,500 revolutions per minute, the water being drawn out of the clothes through the perforations, by centrifugal force. The machine is timed according to the kind of articles being handled.

The washerman also operates the drying tumbler. This resembles a large washing machine. The inner cylinder of wire net revolves in a containing cylinder through which a draught of hot air is forced. The washer loads the cylinder with rough-dry work, or articles such as bath towels which cannot be ironed, closes it and starts it by releasing a control lever.

The washerman may have an assistant who attends to the tumbler and extractor, and who also washes the flat work.

*Special knowledge required.*—The washerman should know the various kinds of dyes and textiles in order to sort clothing for the wash. He should know the best washing formula for each fabric and how to vary the formula to meet special conditions. This involves a knowledge of the kind of soap to use and amount of water, length of each bath and degree of heat. The washerman should know something of the work of spotting described in Chapter XII, "Dry Cleaning." Although formulas are usually furnished the washerman, it would be an advantage for him to know the underlying chemistry of soaps, water softeners, bleaches,

blues, and the effect of these cleaning reagents on each kind of textile and dye used in garment construction. He should also know how to pack clothing in the extractor, and how long to run it for each assortment of clothing. For instance, collars are run longer than anything else because they must "take" more starch. He should know which articles are to be dried in the tumbler, which must be starched and which go directly to the mangle. He should be able to detect need for repairs for each machine, how to keep them clean and how to make minor adjustments.

*Special skill required.*—No special skill is required beyond handling clothes with such care that they will not be torn.

*How special knowledge and skill are obtained.*—The washerman obtains the necessary knowledge and skill from instruction from the foreman, or from previous experience as a helper. It takes two or three months to become a washer. He should obtain knowledge of textiles, dyes and chemistry in a school course.

*Wages.*—Weekly wages vary from twelve to sixteen dollars.

### The Starcher

*What the worker does.*—The starch is made by the foreman. There are two or sometimes three different thicknesses of starch which can be used for different kinds of clothing. Nurses' aprons and collars are starched in the thickest and fine waists and childrens' clothing in the very thinnest. The starcher dips the garment into the starch and wrings it. Wringing may be done by hand or may be done in a small extractor which revolves about half as fast as the extractor previously described. Cold starch is used for shirts, and boiled starch for other clothing.

Collars are starched in a machine which consists of a drum, or roller, padded with starcher felt and cheese cloth, and half submerged in hot starch. The worker feeds the collar onto an apron which carries it through the hot starch between the revolving drum and a series of corrugated brass rolls. Another worker, usually the collar ironer, receives it, gives it a quick rub with the hand to take out wrinkles and bubbles, and hangs it on a drying rack which carries it through a heated drying room and automatically drops it in a basket as it comes out.

The drying of other starched clothing may be accomplished in the same way or the worker may hang them on a rack and push this rack into the drying room, and pull it out when the clothes are dry.



or foreman. The washer loads his machine with articles of about the same kind, sorted on the basis of color, textile and the degree which they are soiled. He tries to remove the stains before putting them in the washer. The formulas are usually furnished by the foreman. Each lot goes through about seven processes. The first bath is cold water; then the washerman turns on the steam, puts in the softener and the soap, and runs the machine for twenty or thirty minutes. The clothes are then rinsed and put through another "suds," after which they are rinsed two or three times. Blueing and sometimes an oxalic acid or acetic bleach is used in one rinse water. The process varies for different "loads" in the kind and amount of chemical, temperature of water, and length of bath. Flannels and silks must be washed with special care. Some very delicate articles are washed by hand in the old fashioned way. One man may tend from four to eight washing machines.

The washer takes the clothing from the machine and packs it in an extractor, the laundry substitute for the wringer. This consists of an upright perforated cylinder or "basket," within a solid container or "crib." The basket revolves at about 1,500 revolutions per minute, the water being drawn out of the clothes through the perforations, by centrifugal force. The machine is timed according to the kind of articles being handled.

The washerman also operates the drying tumbler. This resembles a large washing machine. The inner cylinder of wire net revolves in a containing cylinder through which a draught of hot air is forced. The washer loads the cylinder with rough-dry work, or articles such as bath towels which cannot be ironed, closes it and starts it by releasing a control lever.

The washerman may have an assistant who attends to the tumbler and extractor, and who also washes the flat work.

*Special knowledge required.*---The washerman should know the various kinds of dyes and textiles in order to sort clothing for the wash. He should know the best washing formula for each fabric and how to vary the formula to meet special conditions. This involves a knowledge of the kind of soap to use and amount of water, length of each bath and degree of heat. The washerman should know something of the work of spotting described in Chapter XII, "Dry Cleaning." Although formulas are usually furnished the washerman, it would be an advantage for him to know the underlying chemistry of soaps, water softeners, bleaches,

blues, and the effect of these cleaning reagents on each kind of textile and dye used in garment construction. He should also know how to pack clothing in the extractor, and how long to run it for each assortment of clothing. For instance, collars are run longer than anything else because they must "take" more starch. He should know which articles are to be dried in the tumbler, which must be starched and which go directly to the mangle. He should be able to detect need for repairs for each machine, how to keep them clean and how to make minor adjustments.

*Special skill required.*—No special skill is required beyond handling clothes with such care that they will not be torn.

*How special knowledge and skill are obtained.*—The washerman obtains the necessary knowledge and skill from instruction from the foreman, or from previous experience as a helper. It takes two or three months to become a washer. He should obtain knowledge of textiles, dyes and chemistry in a school course.

*Wages.*—Weekly wages vary from twelve to sixteen dollars.

### **The Starcher**

*What the worker does.*—The starch is made by the foreman. There are two or sometimes three different thicknesses of starch which can be used for different kinds of clothing. Nurses' aprons and collars are starched in the thickest and fine waists and childrens' clothing in the very thinnest. The starcher dips the garment into the starch and wrings it. Wringing may be done by hand or may be done in a small extractor which revolves about half as fast as the extractor previously described. Cold starch is used for shirts, and boiled starch for other clothing.

Collars are starched in a machine which consists of a drum, or roller, padded with starcher felt and cheese cloth, and half submerged in hot starch. The worker feeds the collar onto an apron which carries it through the hot starch between the revolving drum and a series of corrugated brass rolls. Another worker, usually the collar ironer, receives it, gives it a quick rub with the hand to take out wrinkles and bubbles, and hangs it on a drying rack which carries it through a heated drying room and automatically drops it in a basket as it comes out.

The drying of other starched clothing may be accomplished in the same way or the worker may hang them on a rack and push this rack into the drying room, and pull it out when the clothes are dry.

*Special knowledge required.*—The worker must know what starch is to be used for each different kind of garment she handles. This involves some knowledge of textiles because different textiles “take” the starch differently.

She should know how to operate the extractor and how long each kind of garment should be allowed to run in the extractor. However, only an approximation to the correct time is necessary.

*Special skill required.*—A slight amount of skill is required in rubbing the starch from the collars and rubbing it into the heavy weight materials and the manipulation of machines.

*How special knowledge and skill are obtained.*—Special knowledge and skill are obtained by instructions from the foreman and other workers.

*Wages.*—Weekly wages vary from five to eight dollars.

### **The Machine Ironer**

#### **Facts Common to All Ironers**

*Presses and cylinder machines.*—Practically all ironing machines may be grouped in two general types; presses, in which the part of the garment to be ironed is placed over a padded bed, which, by means of a foot lever, is brought in contact with a flat metal surface which is heated by a steam chest; and cylinder machines in which flat work is fed between two revolving heated and padded cylinders.

The former type is used for pressing cuffs, neck bands, and yokes, and shirt bosoms, and the latter for most flat work, such as towels and bed linen.

*Special knowledge required.*—All presses are operated and controlled by a foot treadle or lever, and all cylinder machines are started and stopped by a hand lever. Each operator must be skillful in controlling her machine and must also be able to replace old pads with new ones on the press bed when necessary. She must be sufficiently acquainted with the machine to detect the need for special adjustments to be reported to the engineer. In Richmond, each operator may be called upon at any time to work on any machine. She must, therefore, have a working knowledge of the entire pressing department and all machines in use.

*Special skill required.*—Skill relates to controlling the machine and keeping it in good condition, and in properly placing the gar-

ment or part of the garment on the press pad, or properly feeding flat work between the cylinder rolls. Operators must feed in flat work with a straight, smooth edge, or the work will come out with "ears," or long corners.

*How special knowledge and skill are obtained.*—The knowledge and skill necessary for operating all types of presses and cylinder machines may be obtained in a few days while working on the job.

*Wages.*—Weekly wages are from five to eight dollars for an ironing operator.

### **The Machine Ironer: Collar**

*What the worker does.*—The collar ironer may assist the foreman and the engineer. The worker takes the collars as they come from the drying room and lays them flat in a collar book. This book is about two feet wide and three feet long and contains leaves of thick cotton cloth which are dampened until water can be squeezed from them. The collars are carefully placed between the leaves. The ironer then places the book in a hand press, turns a screw and leaves it for an hour or so. This causes the collars to become evenly dampened. She then takes the book from the press, opens each leaf, takes out the collars, and stacks them evenly in a collar stack. She then feeds the collars into a cylinder ironer, which is similar to a flat work ironer, only much smaller. Collars must be fed in evenly. There is a mirror behind the first roll which enables the worker to see whether they are going through as they should or whether they are wrinkling or turning back. After passing between the rolls, the collars drop onto a shelf on the other side of the ironer.

The ironed collars are then inspected for spots and wrinkles. Spots are remedied by rubbing with a cloth and wrinkles by re-dampening the collar and repeating the ironing process. If the collar is dirty or discolored, it is sent back to the wash.

Collars which are to be folded are run through the seam dampener by which means they are dampened along the fold. The seam dampener is a small machine with an endless cord which, during its course, runs through a water trough, being held in place by guide wheels. The collars are fed between these wheels in order to dampen the seam along which the fold is to be made.

The ironer runs from fifty to a hundred collars through this

machine and then takes the pile to the "Shaw" machine; a machine with an upright brass cylinder and an iron, shaped to the cylinder, which swings on a pivot. The worker folds the collar on the dampened edge, places it on the circular end of the cylinder and passes the iron over it to smooth the edge. The folded collar is then run between a small revolving cylinder and a heated iron to round it; or, collars may be placed seam to seam in a "shaper," which is a heated porcelain tube about three inches in diameter. As each collar is forced through the tube, it drops into a basket under the table.

The collar ironer may help in some other department, such as starching or sorting.

### **The Machine Ironer: Cuff Press**

*What the worker does.*—The cuffs of men's shirts are pressed by means of the single or double cuff press. A double press was in use where the type study was made. The cuff press is built with two saddle shaped padded beds with steam chests directly above the beds. The operator smoothes the cuff and places it on the saddle pad, wrong side up, and then by pressing a foot lever, forces the saddle against the steam chest which is shaped to fit it. She keeps the cuff in this position for a few seconds, releases the saddle with another foot lever, and repeats the operation on the same cuff, but this time right side up. While this cuff is being pressed against the steam chest, she mounts the other cuff in the other saddle. Thus both units of the cuff press are in continuous operation. The skillful operator loses no time between each operation, thus getting the maximum output possible from the machine.

### **The Machine Ironer: Neck and Yoke Press**

*What the worker does.*—One girl usually operates the neck band and yoke press, these machines being mounted side by side. Both presses operate, in principle, just as the cuff press previously described, the essence of the operation being to place the part on the padded bed and bring the bed in contact with a steam chest by means of a foot lever. In pressing neck bands and men's shirts, the operator shakes some powder in the fold of the back buttonhole to prevent the fold from sticking together, and then carefully mounts the band, wrong side up, on the padded bed,

locking it against the steam chest with the foot lever. She reverses the band and repeats the operation. While the band is pressing she takes another shirt from the rack, adjusts the yoke on the yoke pad, clamps the pad against the steam chest, releasing it, and then presses it again, this time, right side up. When both band and yoke are ironed, the band is held together with a collar button which the presser inserts.

#### **The Machine Ironer: Bosom Press**

*What the worker does.*—The operator adjusts the shirt bosom on a pad, which is similar in shape and size to the ordinary shirt front. The bosoms must be mounted without wrinkles, and the neck band must be adjusted over the next form in exactly the proper position. By means of the foot lever, the bosom thus mounted on the pad is forced and clamped against the steam chest. While one bosom is "pressing," she mounts another on another shirt pad, ready for the press. If the bosom of the shirt is pleated, she raises the pleats by means of a blunt instrument resembling a paper knife. One type of machine, now little used, rolls the bosom under a heated cylinder, instead of a flat press.

#### **The Machine Ironer: Half Sleeve**

*What the worker does.*—The lower half of the sleeve is placed over a padded roll which revolves against a heated metal cylinder. The worker brings the cylinder in contact with the roll by a foot pedal. She must feed in the sleeve so that it will be ironed smoothly. This process may be omitted.

#### **The Machine Ironer: Sleeve**

*What the worker does.*—The sleeve ironer is similar to the half sleeve ironer except that the roll and cylinders are long enough to take in the whole sleeve. The worker feeds in the sleeve of the shirt so that it will be ironed smoothly.

#### **The Machine Ironer: Body**

*What the worker does.*—This worker operates a machine similar to the sleeve ironer, only the cylinders are about twice as large. The body of the shirt is fed, onto the roll and ironed smoothly. This worker also irons ladies' skirts and waists in a similar manner.

### **The Machine Ironer: Flat Work**

*What the worker does.*—Flat work, such as table and bed linens and towels, comes to the ironer directly from the extractor. The ironer shakes out each piece, laying it right side up over a pole. Sheets and table cloths are folded. The pole is then hung between the ironer and the cylinder machine. The machine consists of a large heated cylinder, revolving against padded rolls. The operator takes each article from the pole and places it on an apron which carries it between the cylinder and the rolls. It must be placed evenly on the apron and held firmly so that it will not wrinkle and will come out square. On large pieces two girls work together. They stretch out the piece at the top, smoothing it out from the center as it is drawn in.

Girls at the other side receive pieces as they come through, fold them and pile together work of a kind. They inspect at the same time and turn any back imperfect piece to be ironed again.

The girls interchange positions so that each worker feeds and receives and folds parts of the time.

### **The Hand Ironer: Shirt Finisher**

*What the worker does.*—The shirt finisher uses an electric iron on a padded ironing table. After the shirt has been machine ironed, the hand ironer irons the bosom again, as well as other parts of the shirt which need it. She then folds the shirt ready for delivery. A special shirt folder may do this work. In folding, the shirt is placed on the table front down, the sleeves folded down over the side of the back, the sides folded about one-fourth their width over the sleeves, and pinned to the other side. The tail is then folded back toward neck and pinned, and the whole held in place by a strip of paper pasted around it.

*Special knowledge required.*—The shirt finisher must know how to fold the shirt and what parts of the shirt to re-iron.

*Special skill required.*—She must know how to use the iron so as not to scorch or leave wrinkles in the garment.

*How special knowledge and skill are obtained.*—She obtains the necessary knowledge and skill by instructions from the foreman or other worker, and by experience in ironing at home.

*Wage.*—Weekly wages range from six to eight dollars.

### **The Hand Ironer: Miscellaneous**

*What the worker does.*—Shirt waists, children's clothing, and lingerie, are ironed entirely by hand with an ordinary electric iron on a padded ironing board. Large pieces may be ironed on the steam press. When the steam press is used, the garment is adjusted on the padded press bed and the heated steam box is brought down on it and force exerted by pressure on a foot lever. The steam press is used for skirts, waiters' coats, and overall suits. Such garments may be finished by hand.

*Special knowledge required.*—Worker must know how to iron each kind of garment and textile which she handles. She must know where creases, if any, should be made.

*Special skill required.*—She must know how to iron smoothly and without scorching. She must also do her work quickly. Mistakes here may be expensive, particularly if the worker covers them up and allows them to go to the customers.

*How special knowledge and skill are obtained.*—It may take a month or two to train a hand ironer. Those employed have generally had experience in ironing at home. Both the knowledge and skill of most workers have been thus obtained.

*Wages.*—Weekly wages range from six to eight dollars.

### **The Deliveryman**

*What the worker does.*—Every Monday morning the deliveryman collects work from the regular patrons and from special orders. He receives blanks from the office girl, filled in with name and address of each customer, and places this blank in each bundle he collects. He plans his routes so as not to cover the same ground twice in the same day. Tuesday he begins to deliver and also collect on the same route.

He receives payment due on bundles. He may refuse to leave the bundle if pay is not ready. He may drive either a horse or a machine.

*Special knowledge required.*—Deliverymen should know the town so as to take advantage of short cuts, plan routes, and find addresses. They should know how to drive the machine or horse. They should know something of the laundry processes in order to make explanations to customers. Acquaintance with the



laundry's customers is an asset. They must exercise good judgment in extending credit, which involves a knowledge of human nature and the power of wise discretion. For instance, credit should rarely be extended to rooming house customers.

*Special skill required.*—No skill is required except the driving of the machine or horse.

*How special knowledge and skill are obtained.*—It requires about two months' time to obtain the necessary knowledge and skill.

*Wages.*—Wages vary from twelve to fifteen dollars a week. Some deliverymen work on a commission basis. In Richmond they are censured but not made to stand the loss due to mistaken judgment in the extending of credit.

### SURVEY COMMITTEE RECOMMENDATIONS

The steam laundry business in Richmond, while steadily growing, is still in its infancy. The custom still prevails of doing washing and ironing in the home, or having it done by a washerwoman who either comes to the home or takes the laundry work to her home.

Richmond laundries consist of four departments: Office, laundry proper, engine room and delivery. Deductions relative to office work are found at the conclusion of Chapter XIX, "Office Service." The work of the laundry proper gives employment to foremen, markers and sorters, washers, starchers and ironers. According to the present requirements in the laundry business no school vocational education on either a trade preparatory or trade extension basis is needed for markers, sorters or ironers.

Proprietors, foremen, and washers need a rather complete knowledge of the nature of fabrics and dyes, and applied chemistry in the treatment of waters and in the selection and making of soaps and starches, and the use of bleaches. Instruction along these lines should be given in part-time and evening classes, but the Local Board of Education cannot meet this need because no teacher is available. As in the case of dry cleaning, the Survey Committee calls the attention of the Extension Divisions of Indiana and Purdue Universities to this need, and suggests that a practical laundryman of experience, who knows applied chemistry, be employed to offer courses in Richmond and other cities.

## CHAPTER XVI

### OVERVIEW OF COMMERCIAL EMPLOYMENT

*Importance of commercial life.*—Richmond is the most important commercial center between Indianapolis, Dayton and Cincinnati. Its pre-eminence is partly due to the splendid transportation facilities which include steam railroads, interurban lines, and a highly developed auto bus system which extends to all the principle points in Wayne County. Richmond's commercial life dates back almost a century, but it is probable that there were other competing centers in the county prior to 1873,



Modern Auto Busses for Freight and Passengers Radiate from Richmond to All Parts of Wayne County.

at which time it became the seat of the county government. Since 1873 the city has had the commercial advantages which the county seat affords. The lines of commercial employment of most importance are salesmanship, office service, telephone work and mercantile traffic.

*Salesmanship.*—In the various retail stores are sold practically all types of commodities for domestic, farm and factory use that are to be found in the larger cities. This makes the problem of training for salesmanship very difficult, as it is the present consensus of opinion that salespersons must be trained on the basis of the commodity sold, and the number engaged in selling any one type of commodity in Richmond is very limited. Aside from the retail stores, there are wholesale houses which handle groceries and produce; hardware, tools, implements, and cutlery; confectionery; and workingmen's garments. The various selling occupations in retail and wholesale houses give employment to about fifteen hundred workers, of which about one hundred and twenty-five are traveling salesmen.

The analysis of the various phases of selling constitutes one of the most important features of the Survey report, as some thirty-one selling occupations are reported.

*Office service.*—Office work gives employment to almost one thousand workers, of which about three-fourths are males. Each store, whether wholesale or retail, makes some provision for accounting, bookkeeping, receiving and making change and recording sales, while each manufacturing establishment must make practically the same provision. The Survey analyzed five different office positions.

*Telephone service.*—In the city's commercial life, the telephone plays an increasingly important part, for example, it is reported that fifty per cent. of all grocery orders are received over the telephone. The automatic system is used in Richmond and the Survey analyzed the most important operating positions.

*Mercantile traffic.*—Mercantile traffic, in all its branches, gives employment to about five hundred workers, the majority of whom are males. The term, coined by this Survey, is here used to include a large field of commercial activities, heretofore not described, involving all the occupations and problems incident to transferring commodities of any sort, from the producer, manufacturer, agent or seller to selling markets and consumer. The following agencies are included: Steam railroads, steamship lines, express companies, auto express lines, merchants delivery and general transfer companies. Four of the most important traffic positions were analyzed.

*The survey of commercial occupations.*—The commercial survey

included a detailed study of forty-six various occupations, employing fifteen hundred seventy-eight male and four hundred forty-eight female workers, or a total of two thousand twenty-six. These facts are reported in Table 17.

TABLE 17

NUMBER OF OCCUPATIONS ANALYZED AND WORKERS EMPLOYED  
IN COMMERCIAL PURSUITS STUDIED BY THE SURVEY

COMMERCIAL PURSUITS	Number of Occupa- tions Analyzed	Workers Employed		Total
		Males	Females	
Mercantile traffic . . . . .	4	368	.....	368
Mercantile sales . . . . .	31	707	221	928
Telephone service . . . . .	6	.....	15	15
Office service . . . . .	5	503	212	715
Total . . . . .	46	1,578	448	2,026

*Statistical facts.*—The survey received individual reports from about one hundred salespersons, representing thirty-six different lines and about fifty office workers. These facts so received are not here reproduced, being woven into the text of each occupational analysis. These individual reports included data regarding wages, hours of labor, length of working day, etc.



## CHAPTER XVII

---

### COMMERCIAL EMPLOYMENT: MERCANTILE TRAFFIC

*Meaning of the term.*—The term, “mercantile traffic,” coined by this Survey, is here used to include a large field of commercial activities, heretofore not described, involving all the occupations and problems incident to transferring commodities of any sort, from the producer, manufacturer, agent or seller, to selling markets and consumers.

*Importance.*—Mercantile traffic has been studied by the Survey on account of the varied and promising executive and subordinate positions open to men of ability, who possess a rudimentary knowledge of traffic problems. Moreover, the study was thought to be of vital interest to the public as mercantile traffic affects all manufacturers in packing, classifying, shipping and marketing products; all proprietors of large and small stores of all types in purchasing and recognizing and delivering goods; all farmers in purchasing tools and commodities and marketing farm products, and all city and rural consumers.

Furthermore, with increased state and federal regulation and control of public utilities, and especially the railroads and express companies, the traffic problems have become of general public interest. All citizens, therefore, in a state whose attitude is in a process of formation regarding the regulation and ownership of the common carriers of land and sea, must be informed about the basic traffic problems in properly discharging their public duties.

#### Consigning Agencies Concerned in Mercantile Traffic

The following consigning agencies are involved in mercantile traffic: Steam railroads, steamship lines (not analyzed here because of their remoteness to Richmond), express companies, the post office, interurban railroads, freight audit companies, auto express lines, merchants' delivery and general transfer companies.

*The steam railroad.*—The steam railroad and express companies are largely responsible for the scientific development of the field of mercantile traffic. From the early days of the pioneer stage coach service and the primitive steam railroad, down to the present highly developed systems of transportation, the railroads and express companies have gradually accumulated traffic data, systematized it, and reduced it, in part, to a science. The former competition between railroads, and the recent competition between railroads and interurban, auto bus and steamship lines, has greatly stimulated the making of commodity classifications and rates on a scientific basis. For all railroad officials and traffic men, a scientific knowledge of mercantile traffic is absolutely necessary, and for division superintendents, freight agents, clerks, traveling solicitors, baggagemen, and freight handlers, a knowledge of the rudimentary skill and techniques of the field is of vital importance.

*The express company.*—Express companies exist to consign and deliver commodities, and to transfer or deliver money, its equivalents, and other valuables. A detailed, expert knowledge of all the phases of mercantile traffic in their most highly developed scientific and practical aspects, is of prime worth to all officials, ratemen, adjusters, advertisers and solicitors in the express service. A working knowledge of the rudiments of mercantile traffic is necessary for all agents, subordinate officers, office employees, and route and deliverymen.

*The post office.*—With the development of the federal parcel post service, maintained by the post office, practically all postal employees are directly concerned with the problem of mercantile traffic. The government efficiency of this service, depends, in a large measure, upon the acquisition of those in the postal service of the knowledge of the latest developments and problems of this field. To date, parcel mail is handled by the regular postal employees in the same manner as other mail. This means that the postmaster, his assistant, and all postal clerks, including collectors, carriers, weighers, and stamp sellers, must have a knowledge of the rudimentary aspects of mercantile traffic.

*The interurban railroad.*—For all officers, traffic men, solicitors, freight and express agents, clerks, conductors, brakemen, and freight handlers, in the interurban service, a knowledge of the field of mercantile traffic is necessary.

*The freight auditing companies.*—All officers, office subordinates and clerks in freight audit companies, must thoroughly know the field of traffic.

*The auto express lines.*—While auto express lines may traverse non-competing territory, they are able oftentimes, by lower rates and superior service, to successfully compete with steam and inter-urban railroads and old established freight companies. The survival of this system of traffic depends upon officers and office subordinates having an expert knowledge of the scientific phases of traffic, and upon agents and auto drivers, having a rudimentary knowledge of the field.

*The merchants' delivery and transfer company.*—Officials, clerks, bookkeepers, teamsters and express handlers, must know the rudiments of the field, to properly run those parts of their business which are dependent upon contact only with the customer and the company; as well as to properly care for traffic which is dependent upon contact with the customers, the company and the railroad or other agency.

### **The Merchants' and Manufacturers' Concern in Mercantile Traffic**

*The retail merchant.*—The average proprietor of the specialty shop and retail store is likely to think that problems of mercantile traffic do not vitally concern him. In doing so, he takes too much for granted, and is unable to analyze the basic economic fundamentals upon which his future business success or failure depends. As a matter of fact his entire problem of buying is connected with transportation prices. If he uses a mail order house, he must weigh the cost of freight against the lower price of the goods. If he orders from wholesale houses, he must consider the distance the goods have to travel. In giving an order he must specify how he wishes his goods to be sent and that necessitates facing the problem of the relative advantages of various methods of shipment. If speed is essential, he must know the quickest method of securing his consignment; if cheapness, he must know how to obtain quotations from different traffic lines and also the factors that enter into the cost of transportation.

Much of the success of large retail mercantile establishments depends upon the proper application of scientific knowledge to



traffic problems in their relation to the purchase and delivery of goods.

*The wholesale merchant.*—The wholesale merchant determines the location of his establishment almost entirely upon the basis of traffic facilities as related to manufacturing and selling centers. The territory which traveling salesmen may cover with profit to the "home office" depends very largely upon traffic facilities. The wholesaler, expert in mercantile traffic, has therefore a long lead and decided advantage over his competitors.

*The salesperson.*—Mercantile traffic is one of the problems of salespersons. It enters into a study of the quality and source of stock, since the relation of the price of goods and the distance traveled in reaching the buyer must be understood by the intelligent salesperson. In Chapter XVIII, "Mercantile Sales," there is outlined the work of a grocery clerk who is responsible for all goods coming into his firm. He must check for correctness the actual goods against the invoice, be responsible for looking up delayed shipments, getting freight from the station and signing receipts. Some such responsibility is placed on at least one employee in every retail store.

*The office worker.*—Even the office worker has a vital connection with the rudimentary aspects of transportation. Some time he is likely to have to send or receive packages by express and parcel post. One retail store, whose handling of shipping will be further described, places responsibility for mail orders upon the bookkeeping department, whose province it is, also, to check the correctness of all express and freight bills on incoming materials, before paying them.

*The manufacturer.*—The manufacturer, no less than the merchant, must vitally consider all phases of traffic problems. The location of his plant must depend upon traffic facilities as related to the source of raw materials, the selling markets, the terminal railroad facilities and rates, and the rulings of the Interstate Commerce Commission about classification of goods and rates. Manufacturers too often entirely neglect this vital aspect of production, when considering the obvious problems of securing capital, raw materials and labor.

Proximity of railroads and facilities for switching cars there-  
fore are seen to enter into the consideration of the location of  
factories and wholesale houses. The cost of transportation

not only determines the price of products, but also the selection of the most advantageous markets for both buying and selling materials. Methods of shipment also definitely influence the outlay of the plant, whether it be ample enough to admit of railroad tracks, or provides only stock and wareroom facilities with a platform for trucks.

### The Consumers' Concern

*Shopping for the home.*—While the problems of mercantile traffic touch more intimately the daily experience of business men and manufacturers, they are found to enter into the economic life of all in a very vital manner. The average man or woman in making the ordinary purchases of clothing, food and household furniture, is quite unaware of the fact that he or she is paying for the transportation of the goods purchased in the retail price quoted. Nor does he know the advantages and problems involved in buying directly from the mail order house, from the farm or the factory as compared with retail buying in the community. Frequently even a housewife does not realize, when she orders olives from the grocery, that the Spanish variety may be much more expensive than the California brand owing to the distance traveled. The man who buys a coat made within the state may be getting a superior garment, to one more costly made elsewhere, since the cost of shipping must enter into the price of the garment.

*Shopping for the farm.*—Farmers in buying implements, seeds, fertilizer, etc., and in sending produce to the market, need an adequate knowledge of the facilities of transportation, the lines at their command, and the advantages of each in speed, directness, cheapness, convenience and careful handling.

*The moving problem.*—Many men are compelled by their trade or profession to move frequently from one locality to another, and in estimating the net gain of such changes, the expense of moving household goods must be considered. The proper methods of packing, how such goods are classified and what agreement must be signed with the railroad before shipping, ought to be known by all property owners.

### Mercantile Traffic in Richmond

*The scope of the field.*—The field of mercantile traffic in Rich-

mond includes those employed in the post office, the express companies, the freight departments of the railroads and interurban lines, the auto express lines, the merchants' delivery and general transfer companies, the delivery departments of stores and the traffic and shipping departments of manufacturing establishments and wholesale houses.

*Occupations.*—Among the occupations involved in mercantile traffic in Richmond are: Postal clerks, express agents, route men and office force, freight agents, baggagemen, solicitors and freight handlers, weighers, packers, ticket clerks, auto bus drivers and teamsters, traffic men, shipping clerks and rate clerks.

As a number of factories meet their traffic problems without a special employee assigned to this work, it was thought best to study the traffic procedure in this type of organization.

### Methods of Shipping Without Traffic Employees

*Four establishments.*—In the four companies employing neither a traffic man nor a shipping clerk, methods of handling goods are different in each case. In one company, where no employee has a knowledge of freight rating or routing, bills are paid by the bookkeeper without revision. At the end of every month all accumulated bills for incoming and outgoing freight are sent to a freight audit company in Chicago to whom a fee of one hundred dollars a year is paid. This company checks over all bills, presents claims if there are any, and relieves the company of all responsibility and trouble. In the words of the manager, "The service pays for itself many times over every year in recovered claims."

All outgoing shipments which amount to about two hundred carloads are sent f. o. b. Richmond without being routed and are only rated when a certain proportion of the cost is to be refunded the consignee. This is accomplished by telephoning the railroad office for the rate.

In the two retail stores of the group of firms studied, goods to be sold come mainly by express or parcel post, and these bills are not ordinarily audited. If there is a freight consignment, the bill is paid without question as no one in the company knows the freight rates, owing to the infrequency of specific problems of this kind. All outgoing packages are sent by mail and this is attended to by the bookkeeper or her assistant.

The fourth company divided responsibility for incoming

materials between the bill clerk and the disbursement clerk. The railroad office is called for quotations of rates and the clerks of the firm make up a list each year of the rates most constantly used. A freight audit company was used for a time but was found to be unnecessary.

Outgoing shipments are handled easily for several reasons; the territory covered is not wide, goods being standard are always packed in the same way and come under the same classifications, and the salesmen almost always specify on their sales orders the customer's preference for routing his consignment. Small packages are sent parcel post or express, according to the view of the salesman at the head of the department who computes the rate.

### Occupations and Number Employed

	Males
Office men.....	4
Shipping clerks.....	15
Receiving and stock clerks (not analyzed).....	32
Rate clerks.....	8
Deliverymen (see Chapter XVIII).....	156
Express agents (not analyzed).....	3
Transfer men (not analyzed).....	60
Express routemen (not analyzed).....	3
Freight agents (not analyzed).....	3
Freight house foremen (not analyzed).....	3
Assistant freight house foremen (not analyzed).....	6
Allymen (not analyzed).....	7
Freight handlers (not analyzed).....	51
Baggage agents and assistants (not analyzed).....	5
Baggage truckmen (not analyzed).....	10
Parcel post clerks (not analyzed).....	2
Total.....	368

*Scope of this study.*—With the limited time and resources at the disposal of the Survey, it was impossible to study the whole field of mercantile traffic, therefore such occupations were selected for detailed analysis as would best serve to indicate the possibilities of the field and give an overview of the whole. Those selected were: The traffic man, the shipping clerk and the rate clerk. The Survey carefully studied the shipping methods in nine factories, three wholesale houses and two retail shops, in addition

to the local and division freight offices, the express office, the interurban freight office and the postal service.

*General duties of traffic employees.*—A skeleton outline of the field of duties of traffic employees which covers every phase of traffic service and of which only a part would probably be performed by any one shipping or rate clerk, might be summarized as follows:

1. Supervision of packing in warehouse.
2. Supervision of weighing.
3. Making out all forms or checking them.
4. Routing and rating all outgoing cars and packages, if not already specified by consignee's order.
5. Rating and routing packages and cars on prepaid shipments and those sent f. o. b. destination.
6. Preparing computations of rates and directions for routing incoming raw materials.
7. Refiguring rates and routes on incoming shipments.
8. Supervising carting of packages, switching, loading and unloading freight cars.
9. Keeping records of shipments.
10. Tracing delayed shipments.
11. Filing claims for loss, damage and overcharge.

### The Traffic Man

*What the worker does: Handling incoming freight.*—The traffic man looks up the tariffs for various points and calculates cost and directness of various routes; computes the actual cost by multiplying the rate by the weight; makes out, for the shipper through the purchasing agent, directions for sending incoming raw materials which his firm has purchased; checks back all freight bills for incoming material, as well as the routes by which it came, to see if they were chosen wisely; and usually specifies that shippers use the road from whose tracks the consignee has a switch.

If there is a mistake in the rates he takes it up with the shipper or with the railroad. All claims for damage, loss or overcharge are handled by the traffic department. If the bill containing a mistake can be attended to during the month in which the mistake was made, the claim can be settled through the local freight office; if later, it must be handled through the division freight office. He oversees the unloading of freight and notifies the railroad when a car is empty.

*What the worker does: Handling outgoing freight.*—The traffic man looks up rates in tariff books; computes rates on all outgoing shipments and routes them, marks the same on every bill of lading, and prepares all forms including the “manifests” for export; carries on all correspondence in obtaining quotations from different transportation companies; directs and supervises the loading of the car; traces delayed shipments and helps consignee urge lost and damaged consignments; makes out list of freight rates for salesmen for their various districts.

*Special knowledge required: Tariffs.*—The traffic man must have in his possession as many tariffs as are necessary to handle the business of his company. He may require a library of perhaps a thousand volumes, to include class commodity tariffs and classifications with supplements for interstate rates on all the main railroads and water ways in the United States. Express and parcel post tariffs must also be on file. He must know how to read these tariffs accurately in order to find rates from his own shipping point to any destination as well as from any shipping point to Richmond. This reading of tariffs is a technique unlike any other. To look up one rate, the clerk may have to use several books, indexes, classifications and territorial divisions. He must also know if there is any difference between interstate and intrastate rates. He must have all the decisions, up-to-date, of the Interstate Commerce Commission. He must know the comparative cost of a carload and a less than carload shipment.

The traffic man must know the advantages and disadvantages of using through rates, and the cost of transfer from one road to another. A knowledge of the rates for local shipments and those of motor busses and interurban cars is also necessary. He must know rates and classifications for express and parcel post and be able to use their tariffs. He must also know whether classifications for interurban freight are identical with those for railroad freight.

*Special knowledge required: Routes.*—He must have for constant use an Official Guide published by R. G. Dun, of Dun and Bradstreet; maps published by the Rand-McNally Company and also maps printed by the Western Freight Association. For express routing he must have Bollinger's Guide and all the route books of each express company; and for parcel post the Official Postal Guide published by J. B. Lyon, Albany, New York. He must know what routes are covered by motor trucks and inter-

urban cars and the advantages thereof. Equipped with a knowledge of these sources of information, he must be able to find for any given shipment, incoming or outgoing, the most direct and speedy route from one point to another. A knowledge of the comparative advantages of each line of transportation is required. He must also know connecting points, transfer points and terminal facilities.

*Special knowledge required: Packing.*—One of the special problems of the traffic man is packing, owing to its being one of the factors in the classification of freight and parcel post, and express. Not long ago a traffic man found that certain goods were being packed in such a way that they were subject to a higher classification than necessary. He had all the pasteboard boxes broken open and the goods packed in a different way in order to take advantage of a lower classification rate.

The value of knowing the correct way of packing may be illustrated by the story of a Cincinnati firm which sent a consignment of matches to Richmond. They were not packed according to the regulations published by the Interstate Commerce Commission, and were not given a yellow label, which is demanded for that kind of inflammable goods. The mistake was discovered and the Cincinnati firm made to pay a five hundred dollar fine. The Interstate Commerce Commission maintain secret service men to inspect goods of all kinds sent by express or freight. They are empowered to open and examine any package in the freight station or in a private firm and report mistakes found. The railroad, the shipper, or the consignee, whoever is responsible, must pay a fine for ignorance or error. The traffic man supervises all the packing in his firm, gives instructions concerning methods of boxing goods, the amount of packing and the kind of crates to be used for certain classes of goods. For example, he must know that iron bound wooden boxes must be used for all goods for export trade.

Express companies always send a representative to a consignee who complains of receiving damaged goods. If a package is found not to have been packed according to regulation of the express company, the shipper is charged for what is broken. A company which handles breakables must know that to pack them right is not always to pack them tight. One large wholesale firm discovered this fact after sending a number of lampshades to a local store and running up an amazing percentage of loss. When it

It was demonstrated that the shades were packed too tightly for the first margin of flexibility, and after one thickness of corrugated paper was removed from the box, the breakage was greatly reduced.

Another instance of the relation of cost of transportation and methods of packing was experienced by a firm in the south that sent a machine to Richmond with a freight charge of \$34.00. This excessive cost was due to the fact that the shipper sent the machine set up and crated instead of "knocked down," which made the commodity subject to the double first class rate.

*Special knowledge required: Forms.*—The traffic man must know exactly how to prepare all forms used in traffic. Some of these are: Bills of lading, shipping orders, and memoranda, all of which must contain exact weight, description of goods, rate and route, shipper's and consignee's name and address; freight receipts, car ticket and way bills. He must be able to send packages c. o. d. or parcel post and know how to insure them and how to keep an express receipt book.

The traffic man must know, in regard to these forms, how to have them signed, and exactly what the terms of mutual obligation are; to whom to send each form, and which one to file. He must know on what basis his commodities are classified and how to describe them accurately, which requires a thorough familiarity with the product of his company. He must also know the entire history of any shipment; exactly how it has been handled by railroads, express, parcel post, interurban and freight or motor truck companies.

The importance of proper form making cannot be over emphasized. Not long ago a girl in a certain Richmond factory, who marked shipping tickets for individual parts of a consignment and whose work was not supervised, addressed her tickets so that a shipment of goods went to Mr. Jones of Omaha, instead of Mr. Jones of Toledo, with the resulting cost of hundreds of dollars for hauling the heavy commodity back and forth.

The express agent at Richmond, in commenting upon the carelessness with which shippers addressed packages, stated that in one week he found fifty-one shipments marked with two perfectly obvious addresses which caused confusion and delay since packages were first sent back to the shipper, then on to the consignee, or back to a transfer point and then on to the shipper. Each delay, even if it does not cost the shipper money directly, is bad business and bad salesmanship.



*Special knowledge required: Local hauling facilities.*—If the company has private tracks which connect by switches to the main railroad lines, the traffic man must know these facts: The railroad allows only two days' free use of an incoming car, during which time it must be unloaded, or be subject to a demurrage charge of two dollars a day; the railroad's switching charge is three dollars for transferring to another railroad; a car loaded to minimum weight, standing on a siding, must be picked up by the railroad. If the company has no tracks of its own, the shipping clerk must know how to get freight cars for loading and how to handle less than carload lots. When ordering from shippers, Richmond merchants, or their shipping clerks, must consider what carrier will reach them most conveniently and directly, and what drayage charges will have to be met.

The shipping clerk must know the various hours at which certain carriers move; when the interurban freight car leaves; what is the schedule of motor trucks; when express trains and parcel post come in and out; and when his drayman must have freight at the freight house.

*Special knowledge required. Claims.*—When a shipment is delayed the shipping clerk must know how to have it traced. If there is any loss or damage to the actual goods (sometimes a company presses all claims for both incoming and outgoing traffic and sometimes only on one or the other) the shipping clerk must know how to take up a claim against the company responsible. This involves transactions with the local office, if it can be taken up at once, or with the division office, if taken up later. The question of overcharging also has to be taken up in the same manner and claims for rebates, showing the original rates and the tariffs paid, go to local and division claim offices and finally to the Interstate Commerce Commission.

*Special skill required.*—Penmanship is essential since forms, addresses and figures are extremely important. Ability to type-write is an asset since many forms can be best made out on the typewriter or billing machines.

*How special knowledge and skill are obtained on the job.*—The traffic man who learns his technique on the job must nevertheless have some coaching from a superior in learning to read tariffs. After the general principles involved in tariff reading have been grasped, rapidity and accuracy are acquired by experience.

Previous training in a railroad office is of some assistance. Type-writing is frequently acquired after entering upon the job.

*How special knowledge and skill are acquired by theoretical training.*—Courses in traffic work are now being given in several large universities as a special division of their commercial or business department. An extension division of one university offers such training by correspondence. An outline of its curriculum is suggestive as showing the content of this subject.

- Transportation in the United States
- Freight classification
- Freight rates: Official and Eastern Canadian territories; Southern territory, Western territory
- Publication and filing of tariffs
- Some ways of reducing freight charges
- Routing freight shipments
- Bases for freight charges
- The industrial traffic department
- The bill of lading
- Freight claims
- Transit privileges
- Investigation of freight claims
- Railway organization and service
- Statistics of freight traffic
- Railway accounting
- The express service and rates
- Ocean traffic and trade
- Railway regulation
- The act to regulate commerce and Supplemental Acts
- Conference rulings and procedure of the Interstate Commerce Commission
- Demurrage and car efficiency
- Grounds of proof in rate cases
- Application of tariffs
- Laws of carriers of goods
- Guides: Atlas of railway traffic maps, traffic glossaries

Although this correspondence course has been found helpful by several of those who have taken it, directions for solving problems are frequently inadequate; for example, a student found, that in trying to determine the rate between two points, he was confronted by three possibilities, any of which might apply. He was unable to obtain any assistance either in the text or directions by the school.

*How special knowledge and skill are acquired by traffic associations.*—Technical knowledge which must, in this work, be kept

absolutely up-to-date, may be gained through connection with such associations as the Western Freight Association, which supplies maps and copies of agreements to its members; or through membership in clubs where traffic men meet to discuss practical problems of shipping. Decisions of the Interstate Commerce Commission are sent out to shippers who request them.

*Mental and physical requirements.*—The traffic man must be exceptionally intelligent since his work demands great power of concentration and analysis. His must be the type of mind to grasp details and to organize them to conform to a general scheme to suit his particular requirements.

Since his work is of an executive character, there are no special requirements of physique which distinguish this worker from another.

*General knowledge and education required.*—A broad general education is a decided asset to the traffic man, although the exceptional man is frequently able to advance without it.

The basic school courses, on which success in traffic work depends, are: Penmanship, business arithmetic, industrial history, knowledge of business procedure, business forms and commercial geography, which should include the reading of maps and a knowledge of where further information is obtainable. English is especially necessary in this work as the traffic man has to deal with many different individuals and carry on a great deal of carefully prepared correspondence.

*Promotion.*—The position of head traffic man is the highest one in this field and is comparable to that of the manager in other departments, since it is really an executive job. The assistant traffic man is next in rank and he may have been promoted from shipping clerk or may have come from the position of rate clerk in the railroad office.

*Source and selection of workers.* The usual source is from within the establishment or by securing a rate clerk from the railroad office. Since the whole field is a new one, the matter of selection is to some extent experimental, but is usually made in favor of the most expert worker in the position just below.

*Seasonableness and overtime.*—Employment is continuous throughout the year, but there is a good deal of overtime since this work is practically on a professional basis. One traffic man said

he could not keep abreast of his work without doing a good deal on Sunday. A traffic man must be on hand at the end of the day until all shipments are off and memoranda properly signed and mailed.

*Hazards and inherent character of work.*—There are no inherent hazards in this work. It allows for more activity than the usual office position since his responsibilities carry the traffic man into the warehouse and stock-room. His desk is usually in the office proper.

### The Shipping Clerk

*What the worker does in branch companies.*—The nine companies which employ shipping clerks but no traffic men, vary in the amount of work required of a shipping clerk. Two factories, allied to large parent companies, receive from them orders for all their product, which contain specific directions for assembling and routing the consignment and which state the computed rate. The shipping clerks have only to direct packing, prepare proper forms and oversee the loading of goods. No calculations or use of route books or tariffs are required.

Incoming raw material, to one of these companies, is sent by the parent company which rates and routes it. The other company receives most of its raw material, such as pig iron, coal, lumber, etc., f. o. b. Richmond, and, therefore, the only responsibility in handling it depends upon the bookkeeper who must credit on the invoice from the shipper the amount of freight paid. If any shipment should be received f. o. b. shipping point, the clerk telephones the railroad company for the rate from the shipping point in order to check it back. He looks up the route in Dun's Official Guide.

*What the worker does in small branch companies.*—Two other branch companies receive orders for products through the main office. Since these consignments go to certain well known points and are sent f. o. b. Richmond, the routing performed by the shipping clerk is very simple, especially as both companies use the railroad adjoining their property. Rates are never figured but left blank for the railroad clerk to fill in. These companies handle raw material with equal simplicity of system, since bills for incoming freight and express are not checked for correctness.

*What the worker does as assistant to purchasing agent.*—In

another firm the purchasing agent is responsible for freight bills on incoming materials. Consignments are often sent by firms which make a contract including freight charges. He figures rates and routes when he audits the freight bills on incoming material. He has a rate book but if it is not up-to-date or adequate, he telephones the freight office for a quotation of required rates. He also figures routes by consulting the map.

Shipments are sent according to the directions of salesmen. Orders come through the office where large shipments are marked to be sent by freight f. o. b. Richmond, and small consignments marked for parcel post or express, according to the speed desired by the consignee. Packing, weighing and timing the transportation is all the shipping clerk is required to do. The purchasing agent routes many of the large shipments sent to main points, especially those on which an allowance of freight is to be granted the consignee. He also computes rates with the aid of quotations from the local and division freight office. He is not a traffic expert and has only a few tariffs to consult.

*What the worker does when solely responsible.*—The duties of the shipping clerk in the traffic department of another company should be briefly outlined. All orders for outgoing shipments are sent to him for routing. He is responsible for methods of shipping used. He attends to packing for parcels post or express. If the consignment goes by freight he writes up bills of lading. He supervises and checks all routing as suggested by consignee. If it is very poorly routed, it is re-routed. If no routing is expressed it is routed. No rating is given since all orders are shipped f. o. b. Richmond. He helps customers trace losses but does not file claims, and obtains the rate, if shipment is by express.

On incoming shipments the purchasing agent gives orders to the traffic man for routing. He attends to unloading of freight and routes carload stuff but not less than carload lots. If a loss is noted, the company tries to make the shipper pay the claim. Freight bills are figured by calling upon the freight office for rates. For delays, the tracing department is notified and for loss, the claim departments are notified. Express bills are also re-figured.

*What the worker does when the products and markets are standardized.*—In the seventh establishment rates and routes from incoming shipments are handled very simply. The goods are standardized and long familiarity has acquainted the shipping clerk with

proper rating and routing. The bill clerk or the traffic man checks up rates and when in doubt calls the freight office for quotations.

At one time bills were sent, at the end of the month, to a freight audit company for auditing. Because this involved considerable correspondence and trouble with very little benefit, it was dropped. At present there is no check on rates for incoming material except as the experience of the bill clerk and purchasing agent may detect gross errors. Since they have no tariffs and possess no accurate knowledge of rates and routes their judgment is of little value.

*What the worker does when assisted by the traffic clerk.*—Bills for incoming traffic in one wholesale house are checked by the traffic clerk, and, although he has no tariffs for reference he is able to figure rates approximately owing to his previous experience in a railroad office. For outgoing consignments no rates are figured. Routing is easily handled because shipments are for very short distances and only cover a zone of a few hundred miles. Bills of lading are made out by the bill clerk, who describes the article, writes consignee's and shipper's names, weighs packages and adds weights. The salesman usually specifies the customer's preference for express, parcel post or freight. If such directions are not given, the package is sent the cheapest way. The warehouseman is final arbiter of such questions. He has a general list of classifications of the materials handled and must know in general the prices of carload and less than carload lots, according to the weight and bulk of shipments.

*What the worker does as office assistant.*—Since all forms are made out in the office of this company by the bookkeeper and clerical workers, the shipping clerk has a very limited responsibility. He receives orders from the office concerning number and kind of shipments, and directs the boxing and packing for freight and express. He supervises the weighing of every shipment and sends a memoranda of weights into the office. He directs the draymen in handling packages, but has no jurisdiction over methods of shipment as they are stated in the orders he receives. Further responsibility in this company consists of preparing bills of lading and memoranda on outgoing shipments and in figuring extensions on bills for incoming freight. No familiarity with rates and routes is expected of any employee. Much of the raw material comes prepaid.

*Special knowledge required: Tariffs.*—The information the shipping clerk must have, as compared to that needed by the traffic man, is much less intricate and not nearly so broad and inclusive. He has for instance, to know nothing at all about tariffs and classifications, except in the one or two cases already mentioned where the individual happens to know a little and puts that little to use. A general knowledge, however, on what basis classifications are made so that he will appreciate the value of accurate weights and methods of packing is required.

*Special knowledge required: Routes.*—He must know in general what the traffic man knows about routes but uses, for the most part, what local information has been outlined.

*Special knowledge required: Packing, forms and claims.*—Practically everything that the traffic man is required to know about methods of packing goods and forms to be prepared, must also be known by the shipping clerk. He must also know the channels for securing claims on various transportation lines.

*Special skill required.*—Penmanship is essential and very often typewriting is required.

*How special knowledge and skill are obtained.*—The shipping clerk learns on the job practically all that he is required to know. For success he also must know the products and particular system used by his company in recording shipments.

Theoretical training only applies to preparation for promotion since very little of the technical knowledge needed by traffic men applies to the work of the shipping clerk.

*Mental and physical requirements.*—There are no requirements of the shipping clerk which distinguish him from other kinds of workers, except that he must have initiative and the kind of mind which enjoys solving problems and which appreciates the beauty of system and economy.

*General education required.*—Since there is a less accurate and less complicated content of knowledge demanded by the work of the shipping clerk, he is not required to have as broad a general education as the traffic man. The basic school courses already discussed apply also to this worker.

*Promotion.*—Promotion cannot be discussed in general, since every establishment has a different system. One worker progress-

ed from shipping clerk to head of the traffic department. Another started as a stenographer in a freight office, became a railroad rate clerk and then shipping clerk in the traffic department of a private company. Such instances are typical, although some men were found in this group who began, continued and still continue as shipping clerks with no opportunity to advance.

*Source and selection of workers.*—As indicated above, a man may enter employment as shipping clerk; he may be lured from the railroad office by the inducement of higher salary or he may be promoted from other positions in the firm. One shipping clerk in a factory, who also acted as stock man, had been promoted from machine operating in the shop. One worker was advanced from the position of bill clerk. Workers are selected by interview and trial.

*Seasonableness and overtime.*—Because shipping and traffic work carries responsibility and bears a strong similarity to professional work it cannot be limited to standardized hours. Irregular hours and a great deal of overtime is expected of the shipping clerk. He must stay and see that important freight is actually sent off and memoranda of bills of lading mailed to consignees. Employment is continuous throughout the year since, whoever else can be spared in slack times, it is never the man who knows all there is to know about the firm's traffic.

*Hazards and inherent character of work.*—There are no inherent hazards. The shipping clerk is in and out of the factory supervising packing, loading and unloading but has his desk in the office where he keeps his files and typewriter.

### The Rate Clerk

There are eight rate clerks in Richmond in the three railroad freight offices, besides the station agent of the interurban line who performs the same duties.

*What the division rate clerk does.*—The rate clerk's duties are manifold and difficult to describe briefly. He makes rate quotations to individual shippers or to the local freight office, suggests routes and works out combinations, handling not only the tariff of his own but of other roads. Sometimes this becomes very intricate, as, instanced recently when a certain shipper sent in a request for all freight rates from Richmond to any point in



Pennsylvania and included in the list places that were mere names on the map and possessed only a few inhabitants.

The rate clerk checks all rates which appear incorrect. Incoming freight, which has been incorrectly figured, and which is reported by the consignee, or, on occasion, by the receiving agent, is refigured by the rate clerk. He corresponds with other railroad lines about rates.

He figures the basis of new rates, i. e., mileage, etc., on the commodity basis when not found in the tariffs. These new rates must be passed on by the head clerk who must also discuss them with the freight agents on other lines either by correspondence or in conference.

*What the local rate clerk does.*—Local freight office clerks have in general the same duties as those outlined above, except that their quotation of rates frequently cover a smaller field. In addition, they fix rates and routes on all shipping tickets for outgoing freight. This task is unusually large in Richmond because very little outgoing freight is marked by local shippers.

*Special knowledge required.*—What the traffic man or shipping clerk in a private firm has to know about routes, classifications and rates, must be understood in general by the railroad rate clerk, although his field is not so broad. One traffic man, who had worked first in the railroad and then in a private firm, compared the two fields as follows: "The traffic work in a private firm is broader because it covers problems of varying character and involves every kind of transportation line. As a railroad rate clerk, I had only to figure rates on my own and on connecting lines. When I was asked for a rate between two points, I did not have time to study various combinations and schemes for saving money as I now do." The railroad clerk does not have to know about parcel post, express or water routes, but only about regular freight tariffs, consequently his experience is narrower and his knowledge less complete than that of the traffic man in a private company.

*Skill required.*—The only skill required is in penmanship and typewriting. The former is very important since figures and addresses on original bills of lading have legal significance.

*How special knowledge and skill are acquired.*—Penmanship and typewriting are usually prerequisites to employment. Special knowledge concerning rates is not required and may be obtained

on the job. Further training through correspondence courses in traffic problems is an aid to promotion.

*Mental and physical qualifications.*—Since this is office work and the worker is not physically active, little strength of muscle is required. Both speed and energy of a purely mental character are required; also power of analysis and concentration.

*General education.*—A high school education is an asset, if not a necessity, to a rate clerk for entrance, success and promotion. Probably few rate clerks have less than an elementary school education and a number have probably had high school work since heads of offices expressed themselves as preferring high school graduates. This work needs arithmetic and rapid calculation in order to figure rates; grammatical English with which to meet the public in person or over the telephone; systematic and accurate methods of work and training in concentration.

*What the worker lacks.*—Railroad officials have little criticism to make of the efficiency of their employees in this field but point out the fact that very few rate clerks show initiative in grasping the possibilities of advancement offered them. With but few exceptions they remain fixed to their original job.

*Promotion.*—The logical scheme of promotion as indicated by the head of one office is as follows: Stenographer or clerk, to claim clerk, to rate clerk, to assistant chief, and to chief clerk. The rate clerk may also find a better position in a private firm or he may go from a local to a division office or vice versa.

*Source and selection of workers.*—The selection of workers is generally made from among the stenographers or clerks already in the employ of the company. If no one in the office seems fitted for the job, a man from the outside is engaged and given a trial.

*Seasonableness and overtime.*—Employment is continued throughout the year with no regular vacations. There is a great deal of overtime expected for which there is no extra remuneration.

*Hazards and inherent character of work.*—Offices are usually crowded and noisy and the work is confining.

*Wages.*—\$90.00, \$105.00 and \$110.00 per month are the respective salaries paid to three experienced rate clerks.

### **Deliverymen**

For the analysis of work of the deliverymen employed in various retail and wholesale stores of Richmond, see Chapter XVIII, "Mercantile Sales."

### **Limitations of the Present System of Handling Shipments in Richmond**

#### **In Routing or Rating Outgoing Commodities**

*Bad salesmanship.*—Because a large per cent. of good salesmanship consists in service to customers, the executive head of a firm, which does a good deal of shipping, ought to consider the the efficacy of careful rating and routing outgoing shipments. Very often the consignee has no facilities for computing rates and routes and is therefore at the mercy of the railroad official. It is the practice of several large companies in other cities, not only to compute rates and routes on outgoing shipments, but to audit, for their customers, freight bills on their own consignments if the customers will return the bills for auditing. Such a practice is a great asset to a company. Small buyers feel perfectly safe in purchasing from a firm which handles its shipments in this way and therefore not to extend these services is bad salesmanship.

*Bad business.*—If a company prepays any of its consignments, signs contracts for delivery or ships f. o. b. destination, it should know the rates on all its shipments. The present practice in Richmond is to get rate quotations by telephoning the railroad office. The loss resulting from this method lies in the fact that the railroad officials are too busy, to give detailed advice, and although the clerks are perfectly willing to look up rates between the points asked for, and, although they have technical knowledge which enables them to handle tariffs swiftly, yet they have not the time to study each situation and figure the various combinations of routes which will net the consignor a saving in rates or hours. The railroad official also has a natural bias in favor of the road he serves and therefore may be expected to route consignments over it in preference to other roads which may be more direct or cheaper. Hence the private company which uses the railroad office for securing all its information concerning rates and routes, has no check on the advice given and can not know how much money is lost from improper shipment.

### **In Auditing Bills of Incoming Freight**

*The large shipper.*—Large shippers who buy supplies and raw material in great quantities ought to be able to re-figure the rate of transportation. A rate may be secured by telephoning the railroad but it is subject to the difficulty outlined above. A buyer in taking the shipper's rating and routing, does not know whether it is accurate or correct.

A traffic man interviewed for this study, spoke of a recent consignment of bricks shipped by contract and so carelessly routed by the shipper that it was sent over a road which had not even a branch line to Richmond. This meant that the consignee, although not paying the actual freight rate, would have to pay for the transportation and for the extra teaming work in hauling the consignment between the railroad and the factory instead of using their own convenient railroad switch. Having an expert traffic man, this firm was able to re-figure the charges on the consignment and demand that the careless shipper refund the unnecessary hauling charge.

*The small shipper.*—The retailer who buys in small quantities ought to be specially careful about bills for incoming freight because less than carload lots are not standardized as carload lots. Loss through ignorance of proper rates, and routes probably amounts to several hundred dollars a year for Richmond merchants. Expert knowledge of the rates and routes is necessary to adequately cope with the situation.

An instance of loss through ignorance or carelessness is found in the routing of freight packages from Toledo which have a regular overcharge of twenty-five cents. This is due to careless routing by the shippers who send the consignments through Marion instead of direct to Richmond, and thereby involve a transfer charge of twenty-five cents extra on each package.

### **In Using Freight Audit Companies**

*A wasteful method.*—The practice of using a freight audit company has already been mentioned in this analysis. It consists of turning over to a central bureau or audit company the bills collected and paid during the month by a shipper. The audit company employs traffic experts to audit the bills and to present all claims for overcharges. There are two systems of remuneration used by such bureaus; one, a charge of a fixed sum for whatever service is necessary; the other, a charge of a commission on

a basis of fifty per cent. on every claim secured. Employers interviewed on the subject of the use of these audit companies, differ in opinions as to their efficiency. Evidence on the one hand of their having "paid for themselves several times over in a year," is off-set by testimony to the effect that little or no return is made to the firm using them, that carelessness in losing original bills of lading is carried occasionally to the point of actual duplicity on the part of companies who receive claims not reported and that the extensive correspondence involved is more burdensome than profitable. It is, however, no part of the Survey's responsibility to establish a case for or against the efficiency of individual audit bureaus but it seems to be evident that this method of handling and checking cost of transportation is less efficient than using a local expert who can fix original rates correctly and thus obviate the tiresome and wasteful collections of claims, with the accompanying cost in fees and commissions.

#### Actual Economy of Expert Service

Perhaps the best way of picturing the waste and loss that accrues at present in Richmond in handling outgoing and incoming mercantile traffic is to show the positive gain in the work of the expert.

A certain traffic man in a nearby city outside the state related an instance of how by careful routing of a large shipment of manufactured goods which was sent partly by water and partly by rail and so planned as to take advantage of every exception provided by the Interstate Commerce Commission, he saved his company as much as the value of the shipment which amounted to over five hundred dollars.

*Immediate economy.*—Several similar situations described by one of the traffic men of Richmond show parallel advantages of expert work in solving transportation problems. He found that in certain cases it was cheaper to send a shipment of goods to Cincinnati and then back to Indiana in reaching some of the southern towns of Indiana than to ship directly south since interstate rates per hundred pounds are several cents cheaper than intrastate rates.

If the shipper in Richmond were to telephone the local freight office and ask how to send a shipment to New Orleans, the railroad agent would answer, ninety-nine times out of a hundred, that it should go through Cincinnati, whereas, better arrange-

ments both in speed and cost can often be made by sending to Louisville, Kentucky, and then south by a different road. Questions of cost of transfer from one road to another must be considered also in planning a route.

Not many people know that in shipping to Minnesota it is cheaper to use a number of local lines with local rates than to use the through-route rate. In order to get this advantage, however, it is necessary to appeal to the Interstate Commerce Commission and request that this division be extended, since ordinarily the rate that holds is the published through-route rate. During a year such schemes of the expert in saving amount to many thousands of dollars.

*Ultimate economy.*—On the other hand, it may be found better salesmanship, and cheaper in the long run, to use the more direct if more costly systems of transportation, than to allow a consignment to proceed slowly for the sake of immediate cheapness. For instance it takes six weeks to float a shipment around the gulf across the Panama and the Pacific to western points. The cheapness of such a route may be more than off-set by the length of time it requires.

### Constructive Suggestions

#### For Increased Efficiency in Handling Mercantile Traffic

*Summary of wasteful methods.*—A company is not keeping its over-head expenses down or properly accounting for expenditures, if there is no adequate systematic concern given to the problems of shipping. It has been shown in this report that the only tightly welded system which is proof against leakage is that of handling incoming and outgoing shipments through an expert. Mistakes in packing and labeling are costly; claims are hard to establish; regulations and exceptions are difficult to know. The railroads have neither time or equipment to give unlimited service to the solution of private problems of shipping and it is unfair to demand that they should. Audit companies are costly of time, attention and money. It is bad salesmanship on the part of a company to accept no responsibility for the consignee. Therefore, it would seem that the business men of Richmond need expert service to aid in solving problems of mercantile traffic in such a way that both incoming and outgoing consignments would be handled with clear cut efficiency and with the minimum waste of time and money.

*City traffic man.*—Small shippers, firms which only deliver goods within a zone of a hundred miles and retail stores, all declare and with truth, that it would not pay them to retain traffic experts for their small volume of shipping. If this be true of individual firms, there remains the possibility of co-operation in engaging the services of one expert who would devote his time to solving the usual problems of transportation. Small shippers of each firm, would be able to obtain, at small expense, accurate technical information and advice. This might be done by following the plan provided in other cities of maintaining a traffic man in the City Chamber of Commerce who might be called upon at any time to handle special problems of routing, who would be an expert tariff reader; who could give regulations about packing and weighing and who might be the source of information of all kinds. The large responsibilities of such a position would place it in the field of professional work and give the expert the dignity of a confidential adviser who held the transactions of the individual firms as professional memoranda.

The work of an expert is important not only from the standpoint of efficient service to the firms requiring it, but from that of the efficiency of each shipping clerk. The employee in each firm could do his work much more accurately and advance farther into the knowledge of systematic methods of shipment, if there were a superior officer ready to advise him on questionable points and give him accurate ratings so as to assist him in better serving those who are buying the product of the firm.

#### **For Training for Occupations in Mercantile Traffic**

*Two types of training.*—As has already been indicated, the basic school courses underlying the work of the traffic man and shipping clerks are penmanship, reading, business English, business arithmetic and commercial geography. Direct training in transportation service seems to divide itself into two main groups; technical knowledge of tariffs, and general knowledge of the problem of mercantile traffic. The first is specialized and valuable only to the few individuals who may become traffic men. It can be gained through university extension courses taken in connection with actual work. This study is too intricate and technical to be offered in high school and could never be given successfully as a vocational course to those not yet engaged in work, since they could not possibly grasp the details nor acquire the technique involved without an experience basis.

But a general knowledge of the problems in mercantile traffic is useful not only to the shipping clerk, of whom there is at least one in every large factory or wholesale house, but to the average boy or girl who is going into business, since the sore need for greater and more widespread intelligence in handling commodities has been demonstrated.

*Content of school courses.*—Every student in commercial classes who expects to go into business, ought to know certain definite things about traffic. In addition, he ought to be familiar with sources of further information and with methods of finding out whatever in the future he may need to know. On the basis of about twenty-five interviews with men engaged in traffic work, the Survey is able to suggest definitely the content of such a general course of instruction.

General facts about the world's markets and industries in the United States. Study of maps and main lines of transportation.

List of maps published:

Cost of Transportation:

Elements which determine cost

How fixed

Work of Interstate Commerce Commission

What determines classifications:

Bulk

Weight

Value

Fragility

Nature of the article

What determines rates:

"What the traffic will bear," theory

Distance, element and differentials

Classification

How to secure tariff ratings:

Interurban car

Parcel Post

Freight

Express

Lake, river, canal and coastwise traffic

Advantages between various kinds of carriers such as

Railroad

Waterway

Express

Interurban

Motor truck

} From the standpoint of {

Convenience

Cheapness

Speed

Safety



What determines selection of one line of carriers as compared with another:

- Directions
- Transfer point
- Terminal facilities
- Differences in rate combinations

• Relations of packing to transportation:

Regulations:

- General character
- Where to find them

Elements to consider:

- Cheapness
- Careful handling

Methods of packing:

- Knocked down
- Crated
- Uncrated
- Nested
- Boxed
- Kind of car used

Methods of loading and hauling:

- Carload
- Less than carload

Preparation of forms:

- Addressing
- Ticketing
- Bill of lading
- Shipping order
- Memoranda

Receipts:

- Freight
- Express
- Parcel Post

Insurance:

Definition of terms:

- C.O.D.
- F.O.B. shipping point
- F.O.B. destination

Claims:

- Contract entered into when sending shipment
- Proper grounds of making claims
- Delay
- Overcharge
- Damage
- Loss
- Method of preferring claims

Auditing freight bills

### SURVEY COMMITTEE RECOMMENDATIONS

The Survey Committee concurs with the recommendations of the Survey Staff that every student in commercial classes who expects to go into business as an office worker, salesperson or railroad employee should receive definite instruction concerning mercantile traffic and transportation as outlined in this report. The Richmond Board of Education is urged to make provision for this work as a part of the commercial department of the high school.

For those already employed in Richmond including store proprietors, shipping clerks or traffic men, evening school extension courses in traffic problems are recommended by the Survey Committee. The Richmond Board of Education cannot meet this need as no teacher is available. This need for extension work is called to the attention of the extension divisions of Indiana and Purdue Universities, with the hope that provision may be made for correspondence and evening courses in Mercantile Traffic.

The Survey also indicates the need for the employment of an expert traffic man, whose services might be available for all merchants and manufacturers in the city. This need is referred to the Richmond Commercial Club.

The Survey Committee indicates to the Richmond Public Library the need for providing maps, books and pamphlets in the field of mercantile traffic, so arranged and cataloged as to be of service to shippers, traffic men, shipping clerks, store proprietors and students.



## CHAPTER XVIII

---

### COMMERCIAL EMPLOYMENT: MERCANTILE SALES

*Importance.*—In every city or town there is the constant necessity for personal exchange of goods for money. This interchange of commodities constitutes a large proportion of the business of the community. In Richmond, as has been stated in the general discussion of the business of the city, retail trade is one of the chief sources of the city's wealth. Being the county seat and situated on the main lines of interurban and steam railroad transportation, Richmond is the shopping center of the county.

*Number of stores and employees.*—In Richmond, there are about 290 mercantile establishments, giving employment to about 600 males and 250 female salespersons, 300 deliverymen and boys, and 150 janitors.

*Types of stores.*—The speciality stores have been chosen as the basis for the study of salesmanship rather than the department store which in previous surveys has been made the basic ground for study. The range in type of salesmanship required in the different speciality shops has given rise to the contention that an analysis of the work of a counterbound salesperson in a department store cannot be typical of the whole field. There remains also the fact that there are hundreds of specialty stores to one department store and that the tendency of recent years is toward greater specialization in this, as in other lines of mercantile sales.

#### **Character of Employment in Richmond**

*Classification of salespersons.*—In Richmond everyone engaged in mercantile business is a salesperson except those in delivery and building service. Not only girls behind the counter but proprietors and floor men and women concern themselves directly with selling in addition to their other duties. Therefore, it is not possible to group workers in mercantile trade according to such clear cut classifications as hold for similar studies in Cleve-

land, Minneapolis and Richmond, Virginia, which suggest that merchandizing positions are divided into stockkeeper, general salesperson, specialty salespersons, bargain salespersons, assistant buyers, buyers and auxiliary positions such as that of floor men and messenger girl. In Richmond the buyer of one day may act as floor man the next, or the salesperson may also be required to take the place of stockkeeper, while, except during the Christmas holidays when extra workers are employed, there are neither specialty, bargain salespersons nor messengers. With such overlapping of duties in mind, however, it is possible to classify workers in Richmond mercantile stores as executives, heads of departments, floor directors, buyers and salespersons. In only one store all five separate divisions of workers were found.

*Inter-department work*—Work required of employees in any of the stores studied in Richmond is much more general than in the large department stores described in the above mentioned Survey reports. The salesperson does not sell one kind of merchandise only nor attend to one counter only, but must be able to sell any article in the store and frequently does so, when the store is crowded or at noon when some of the clerks are at luncheon. This is an important characteristic of sales work in Richmond. It thwarts any scheme of inter-departmental promotion because differences between work in departments tend to be levelled down if anyone can sell anything. It must, however, be remembered that each salesperson knows one department better than another, has certain specified duties and looks after only one kind of stock; also that almost every kind of store has a few departments where wares are of so special a character as to require the exclusive attention of certain salespersons. Nevertheless, it is the rule that general duties are required of the majority of salespersons in Richmond.

*Opportunities as compared with large cities.*—Because of this general work expected of every salesperson, the experience of every individual is broader than it is in stores where each worker is clamped to one counter or to a section of one counter whose narrow borders constitute their entire business outlook. On the other hand, where departments are not clearly defined, promotion consists only of receiving increase in salary or of becoming a buyer, for which there is in the largest establishment about one chance in twenty. Probably this accounts for the fact that many sales-

people who feel that they have learned a certain retail trade, leave their employment to set up a business for themselves. This increase in the number of individual firms in each line, such as the grocery or millinery business, further tends to restrict the possibilities of growth of any one firm and render impossible the introduction of new departments, positions or higher salaries.

*The scope of salesmanship.*—The fifteen different stores discussed in this report are representative of retail business. This is but one branch, however, of the entire field of selling. There are many varieties of sales work not included in this study; the agent who is in charge of a sales room where pianos or automobiles are displayed but where no stock is kept; the commission man who buys and sells for a producing or wholesale house; the auctioneer who sells merchandise under the hammer for whatever he may get; and the salesman traveling for a factory, who covers a certain district selling to jobbers or bidding for contracts, are not included.

The work of the traveling salesman is deserving of serious study. He represents his company whose product and methods are made tangible to the consumer only through his ability and personality and with the price list and catalogs he carries. This salesman plans his own schedule of work and to some extent his itinerary; he must figure discounts to his customer and be able to tell him the cost of transporting the consignment. On his ability to please the customer, represent his house and to record the order exactly, depends his success. When one considers that Richmond alone has at least a dozen industries which employ sales representatives, some idea may be gathered of the nation-wide possibilities in this field.

*The scope of this study.*—In order to obtain an accurate picture of the extent, variety and degree of specialization in mercantile sales and the knowledge and skill required in these fields, the Survey analyzed selling occupations in the following stores:

3 Grocery	2 Millinery
3 Meat	2 Five and Ten Cent
1 Confectionery	2 Furniture
2 Drug	1 Jewelry
1 Cigar and Tobacco	1 Florist
4 Dry Goods and Furnishings	1 Book and Stationery
1 Shoe	1 Hardware
1 Men's Furnishing	1 Wholesale Dry Goods

*Occupations studied.*—The work of the salespersons is the subject of this chapter. Executive positions, at one end of scale, and delivery service at the other, were treated only in relation to selling, while office positions are included in Chapter "Office Service."

*Basis of discussion.*—Each kind of store is here treated separately because the chief differentiation in opportunity and educational content between the work of salespersons in different of business is the commodity sold. Therefore, there can be no grouping of specialty shops which sell commodities having similarity to each other.

### Types of Stores and Salespersons Employed

Type of Establishment	Number of Stores		Salespersons		Delivery Force	Other Employed
	In City	Reporting	Males	Females	Males	
Grocery.....	74	39	67	12	38	.....
Meat.....	19	5	11	.....	9	Meat Ch
Bakery (not analyzed)...	8	8	20	6	10	Bakers Wrapp
Confectionery.	4	2	9	2	2	Wait Cooks Dishwas
Drug.....	22	8	28	1	6	Pharma Soda F tain H
Cigar and Tobacco.....	10	4	11	6	.....	.....
Dry Goods and Furnishings..	16	9	47	91	7	.....
Shoe.....	8	4	27	5	.....	Cobbler Bootl
Mens' Furnishing.....	10	8	20	2	3	.....
Millinery.....	9	8	.....	39	.....	Apprent and He
Five and Ten Cent.....	2	2	5	38	.....	.....
Furniture.....	7	5	38	2	8	Repair
Jewelry.....	6	5	9	3	1	.....

Type of Establish- ment	Number of Stores		Salespersons		Delivery Force	Other Employees
	In City	Report- ing	Males	Females	Males	
Florist.....	3	3	2	2	1	Greenhouse Men and La- borers
Books and Sta- tionery.....	3	3	8	2	3	PaperHangers
Musical Instru- ments (not analyzed)...	2	1	4	1	3	Tuners
Theatre (not analyzed)...	6	4	.....	.....	.....	Moving Pic- ture Machine Operators
Fuel and Lum- ber (not ana- lyzed).....	6	6	15	.....	39	.....
Office Sales(not analyzed)...	16	16	27	2	12	Advertising Agents
Real Estate and Insurance (not analyzed)	17	17	32	.....	.....	Proprietors form the largest group
Retail and Wholesale Hardware...	8	7	67	1	8	Repairmen
Wholesale Pro- duce (not ana- lyzed).....	4	4	8	.....	3	.....
Wholesale Leather (not analyzed)...	1	1	3	.....	5	Repairmen
Wholesale Dry Goods.....	1	1	13	.....	9	Operators
Wholesale Gro- ceries (not analyzed)...	2	2	20	6	4	.....
Factory Sales Force (not analyzed)...	16	16	45	.....	.....	.....
<b>Total.....</b>	<b>280</b>	<b>188</b>	<b>536</b>	<b>221</b>	<b>171</b>	



### 1. The Large Grocery Store

*Large and small stores.*—The work of the large grocery store includes every problem presented by the small store, except that in the latter the proprietor has more responsibility and the question of buying is more difficult although narrower. The store studied has twenty-one employees, seven of whom are in the delivery force and twelve are regular salespersons.

*The scope.*—There are seventy-nine grocery stores in Richmond, employing about one hundred salespersons and forty deliverymen. The size of the field is said to be deceptive in its suggestion of opportunity, inasmuch as there are no available facts about the number of stores which are operating at a profit, and inasmuch as the number of employees per store is small.

*Store organization.*—Each employee has certain special tasks and certain general duties which together constitute a program whose main order is unchanging from day to day and for which he is responsible to no one but the manager or proprietor of the store. All salespersons use the same printed forms in taking orders and the cash register for ringing up sales.

*System of orders: Customer in store.*—The customer is received by the floor walker by whom he is directed to a disengaged clerk. Special information about stock is secured by the clerk from men in charge of special stock. The sales slip is made out if the order is to be delivered and if a charge sale the slip is given the cashier for filing. If the customer makes a cash purchase, the clerk simply adds the bill and gives cash to cashier for each register, or, in her absence, rings up the sale himself. If it is a charge sale, the clerk rings up the sale and files the charge slip on the cashier's spindle.

*System of orders: Telephone order.*—The telephone order is usually taken by one of three girls, but if they are busy, by anyone else in the store. The order is hastily written in the order book while the customer talks, or if the book is not there, a memorandum is scribbled on scratch pad. Later the customer's name and address are written, the date, the amounts extended and the clerk's name signed. The slip is filed on the desk. Clerks assemble orders and place them in the delivery boxes. The sales slip copy is filed back on the same desk. One slip is sent to the customer with the order. When orders are ready they are checked and slips are marked "delivered." Slips of delivered orders are stamped with

deliveryman's name and number, and filed on the cashier's desk for posting. Items are posted on the customer's bill and, after a week or month, statements are mailed to customer.

#### Facts Common to All Workers

*General duties.*—Every employee in this grocery store is supposed to keep busy constantly if he expects to make good. As indicated by the system outlined above each clerk, when not otherwise engaged, must wait on customers who enter the store, and must answer the telephone if those specially assigned to this work are busy. Assembling grocery orders is another general duty. Order slips are taken off the file just as they come, are assembled, each in its wooden box. The clerk signs his initials to the slip and files it on another spindle at the desk. Helping to keep the store in order also devolves upon everyone.

*Special knowledge required.*—The common body of knowledge which every salesperson must have includes first how to approach the customer and determine his desire; how to take orders; to suggest purchases and to discover without direct question what price of goods is desired. All this is really a study of the psychology of the customer plus the possession of an agreeable, businesslike manner and a good vocabulary. Second, the salesperson must know the goods carried by the grocery,—this means a broad familiarity with the entire range of stock and its accompanying price list. The more thorough and accurate this information, the more efficient is the salesperson. In this kind of business the content of special knowledge is very rich. It covers: Names of brands of all canned and bottled goods and the source of these goods as well as of fish, fruits, vegetables, bakery goods and staples. This means being able to trace the commodity from its natural source, through its processes of preparation and transportation. Indeed, the clerk ought to know every step in the long progress from mother earth to the ultimate consumer! A salesperson must also know the "talking point" of each article; advantages of one line of goods over another; prices and reasons for differences in price, and new and specially featured goods. Some indication of the vast detail in stock information may be obtained from considering that there are fourteen kinds of crackers handled in this store, about each of which the salesmen ought to know; where the flour comes from; where the cracker is made; how put up in tins; its price and its relative merit as compared with

other crackers. The clerk ought to be able to inform the customer about methods of preserving perishable goods and how to serve relishes and delicatessens. In certain departments, it is an asset for a clerk to know something about the preparation of the goods he is selling.

*Special skill required.*—Purely manual work in a grocery store consists of handling commodities and wrapping packages; therefore, no special skill is required of salespersons in the grocery business except the man who handles the mechanical devices, such as meat cutters. He should have manual deftness and mechanical ability.

*How special knowledge and skill are obtained.*—Special knowledge consisting of how to approach the customers, and stock information, may be acquired on the job. In addition to experience in handling the commodities sold, salespersons are urged, in this particular store, to read trade journals for which the proprietor subscribes. Some information on specialty goods, is also gathered from the sales agents who come from large producers to advertise their line of wares. The employer gives his salespeople a written examination in merchandise every few months. He carefully grades the examination returns. The results are shown to the force and the effect is thought stimulating to the clerk, and indicative to the employer of the degree of interest held by them, although there is neither direct reward or penalty for good or poor papers. Besides trade journals, there is some printed material available for this group of workers of which are suggested, "The Grocers' Encyclopedia"—W. H. Wiley Publishing Company; "Spices and How to Know Them"—W. M. Gibbs; "What the Grocer Sells Us"—Faeker.

*Mental and physical requirements.*—Since about sixty per cent. of the grocery business is carried on over the telephone, which must be answered by each salesperson every day, accurate hearing and a good voice are essential for this work. Color discrimination is needed by those clerks who have charge of counters and window display. A pleasing appearance is necessary here as in all sales positions. Physical energy is necessary to enable the worker to jump from one thing to another, as the salesperson is required to do in this business, where orders must be out on time and customers not allowed to wait.

*General education required.*—Although the salesperson in the

grocery store needs at least an elementary school education and although the employers state their preference for high school graduates, success depends more upon a special knowledge of merchandise than upon general knowledge. Penmanship, elementary arithmetic and good spoken English are essential prerequisites.

*Promotion.*—Because of the fact that the organization of the grocery store is very simple, with more general than departmental activity and knowledge, opportunities for promotion of the salesperson are limited. Increase in salary and development of a special responsibility is all that is possible, unless the worker has capital enough to purchase a share in the business.

*Source and selection of workers.*—Places in sales work are filled most often by direct application, although sometimes by promotion from the delivery force. Workers are selected by interviews to determine fitness, which depends upon previous experience, personality and education. When engaged, the new employee is on probation for the first week or ten days.

*Seasonableness and overtime.*—Work in the store studied is not seasonable. The schedule of hours is regular. Men arrive at 6:45 a. m. and girls an hour later. Closing hour is 6:15 p. m. for the men and 6:00 p. m. for the girls. On Friday all the men stay until 9:15 p. m., to arrange stock. Saturday closing hour is 10:15 p. m. There is often overtime when customers are late in entering the store or in telephoning orders. Extra hours of work are not paid for directly but recorded by a time clock, and "time off" given on a basis of one and a half times as much. A few of the deliverymen are not regularly employed but work when called and are paid by the hour.

*Hazards and inherent character of the work.*—There are no hazards in this work but it requires longer hours and more standing than most retail stores.

*Wages.*—The average wage in this store for men is twelve to fifteen dollars a week with a maximum of twenty dollars. For girls the average is nine dollars per week.

#### The Salesperson on Outside Orders

*What the worker does.*—Two salesmen, in addition to their regular work, take orders from customers who have no telephones,

and from hotels and restaurants. Orders are taken in the same way as from customers in the store. The order men go out early in the morning with their order books to meet the customers personally and then return to the store for regular work.

*Special knowledge required.*—Success in this work depends upon the extent of the salespersons' information about the stock and the degree to which he has memorized it, since he carries no price list or catalogs. He must know quality and range of his stock and all new purchases, in order to suggest possibilities to the buyer. He must know wholesale and retail prices very thoroughly in order to give exact information to the buyer, and, in the case of hotels, to arrange favorable bargains on a wholesale basis. For this he must know how far he can go in taking liberties with the regular wholesale list price. This work requires a more pleasing personality than does the work in the store. The man who goes to the restaurant, frequently has to meet competition with other grocery men and he must be quick of wit and ingenuous, and have technical knowledge of the substances used in the preparation of foods.

#### **The Salesperson on Display Work**

*What the worker does.*—Three salesmen in this firm are responsible for the decoration and arrangement of the store. One decorates the window using a new scheme every week; one has charge of street stands which have to be freshly arranged every day; and one has charge of the counters which have to be planned every week and arranged every day in accordance with the plan adopted.

*Special knowledge required.*—The most important decorations are for the windows, as these are the best medium of advertising new goods and specialties. The windows must be uniquely arranged in order to attract attention and appealing enough to clinch the customer's impulse to buy. The salesman in charge of the windows must be in touch with the advertising schemes of companies selling special foods, inasmuch as these companies provide advertising material upon request. When this study was made one side window decoration advertised a certain brand of beans, and a short time previous the window decoration had caused a sensation in the town. It had been made into a miniature pen where a number of tiny live pigs disposed themselves in straw or rooted in a small trough. At the other end of the window

was a great show of hams and rashers of bacon, while the entire exhibit bore the attracting legend, "From Pen to Platter." The display features of sidewalk stands and of the counters and interior of the store, do not require such ingenuity or such a degree of artistic taste, but merely a sense of neatness and order and a knowledge of what new goods ought to be featured.

#### **The Salesperson on Special Work**

*What the worker does.*—Other special phases of work in this store are the care of the special lines of commodities such as the bottled and canned goods, the refrigerator stuff and mechanical devices for cutting meat and grinding coffee. All goods have to be ordered and arranged, and perishable stock kept at the right temperature. The mechanical devices must be sharpened, adjusted and operated. One salesman is entirely responsible for their care.

*Special information required.*—A complete knowledge of the special stock handled is the first essential. There are twelve entirely different brands of canned corn and a dozen varieties of grape juice. Each brand of olives has a range of price from ten cents to one dollar and fifty cents. They are sold in the can, in bulk and in glass. They may be plain, ripe or stuffed, and, if the latter, the stuffing may be almonds, pimentos, cheese or olive. The special salesperson must be in close touch with jobbers and producers in order to suggest the introduction of new varieties of stock. The salesman must know at what temperature to keep perishable stuff, and what are their lasting qualities. The refrigerator man must understand the regulation of heat and cold, and the man in charge of mechanical devices must know how to set them up, regulate, clean and adjust them.

## **2. The Small Grocery Store**

*What the worker does.*—The proprietor is one of the regular sales workers in the small grocery store. He does all buying and ordering and attends to the bookkeeping; he is responsible for selecting and directing all employees; he waits on customers and takes part in every activity of the store from banking to "sweeping out." The other salesmen assist the proprietor and do practically what the workers in the large grocery store do, but since there are fewer employed, there is scarcely any specialization. They are

entirely responsible for recording their sales and are permitted to buy in retail small quantities of stuff in order to complete a customer's purchase.

*Special knowledge required.*—The knowledge required in such a store is not different in character from that expected of clerks in a larger establishment. More initiative and general knowledge of business, however, is needed by the clerk in the smaller store, because the proprietor is more dependent upon the quantity and quality of service from each employee.

*Promotion.*—It is even more difficult for the salesperson in a smaller store than in a large store to advance because the wage scale must necessarily be low, and if there is no departmental division, there is no possible step between the proprietor and the salesperson.

*Seasonableness and hours.*—Hours of work are longer in the small store. Overtime is not paid and there is so much work to be done that the worker is on his feet practically all day. Employment is continuous throughout the year, but there are times when pressure of work is not great.

### 3. The Meat Shop

*The scope.*—There are nineteen meat shops in Richmond, only one of which was studied for this report. In the majority of stores the proprietor performs all the important work and the employee merely assists him.

*Shop organization.*—In the shop studied, the proprietor left the retail business entirely to the salespeople because he devoted his entire time to the abattoir, buying and directing the butchering and hanging, which is performed by eight or ten employees. In the retail store there is only the sales department which includes accounting for money transactions through cash register records, and the delivery departments, although there is some overlapping inasmuch as delivery boys, when not on the wagons, help in the store.

#### The Salesman

*What the worker does.*—He cuts all meats, prepares fowls, buys meats, reports to the proprietor when supplies are low and buys canned and packed goods, waits on customers, wraps pack-

ages for delivery, takes telephone orders, records sales and charges on the cash register, and keeps charge accounts in the ledger.

*Special knowledge required.*—No salesperson would be of the slightest value in this store unless he knew cuts of meat. This means, first of all, a thorough knowledge of the anatomy of the animal butchered. He must know along what bones and muscles to cut for various results. To trim meats, he must know what parts are useless for edible purposes, and what may be saved to make lard and soup. He must be familiar with the difference between the appearance of tough and tender meat. It is obvious, therefore, that the meat salesman must have a rudimentary knowledge of cooking meats, especially since customers often, either ask for what they want in turns of the carving process ("Find me a nice roast of lamb," or, "I want a good boiling piece") or they ask the salesman who recommends a certain cut, "How do I cook this?" He must also know the process of preparing packed meat and the differences of various brands. He must know how to hang meats for a certain degree of tenderness, how to prepare fowls and sausage for the consumer, and at what temperature various meats should be kept. It is interesting to note, however, that a man may be a good salesman without knowing about butchering. This requires a different sort of knowledge and skill.

In addition, the salesman must understand the use of the cash register, the best methods of taking orders over the telephone and how to suggest purchases to the customer.

*Special skill required.*—Skill in handling the knives used in cutting, so that the cut will be clean and smooth is required.

*How special knowledge and skill are obtained.*—Knowledge of meat cuts and skill in using the knife is only learned on the job. Delivery boys who help in the store are gradually taught by the salesman.

*Mental and physical requirements.*—Observation, memory and accuracy are needed for success in this work.

*General educational requirements.*—Reading, writing, and simple arithmetic are needed for writing down telephone orders, addressing envelopes and using the cash register.

*Promotion.*—Salesmen may receive increased salary and responsibility as business increases but no other promotion is possible.



*Source and selection of workers.*—The salesman is selected from among personal applicants for work. They are first given trial in the delivery service and other jobs about the store.

*Seasonableness and overtime.*—Work is continuous throughout the year. There is a great deal of overtime for every employee. The overtime increases with added responsibility. One salesman said he worked from seven a. m. until nine-thirty every night, and on Saturday till after midnight in the summer, and on Sunday morning as well, in order to make deliveries to customers who keep no ice.

*Hazards and inherent character of the work.*—The danger of cutting the hands with the sharp knives is always present. For a shop that is popular, the work is very strenuous since almost every sale demands the labor of cutting meats.

#### 4. The Confectionery Store

*The scope.*—There are four confectionery stores aside from bakeries and lunch rooms. One of these was studied for the Survey. In many cases the proprietor manages the store and is on hand almost constantly. No store in Richmond keeps candy exclusively. Each store serves ice cream and soft drinks, and in the winter, in addition, hot bouillon, oysters, coffee and chocolate. Therefore, salespersons in such stores can scarcely be distinguished from waiters and waitresses in lunch and tea rooms.

*Store organization.*—In the store studied the majority of workers were proprietors, but there were four salespersons in addition to one deliveryman and those who do the cleaning. The store has also a wholesale department which is entirely managed by the proprietors. The proprietors do all the buying. Buying for the confectionery store is not as complicated as for many other stores because changes in fashion affect the situation so slightly.

##### The Salesperson

*What the worker does.*—The salesperson in this store has work similar to that of the soda fountain clerk; she takes orders from customers for creams and drinks, mixes and serves them and washes dishes and glasses. In addition to selling candy and taking orders over the telephone, the salesmen are responsible for keeping the salesroom in immaculate order.

*Special knowledge required.*—Knowledge of stock is less complicated in this business than in almost any other. It involves merely knowing where candies and creams come from, how they are made and their ingredients, and being familiar with the entire list of drinks advertised, syrups and creams on hand, how to mix them according to the simple receipts in stock, how to use the electric devices for mixing egg drinks, and how to serve them and what price to charge.

*Special skill required.*—The mixing of syrups and squeezing of lemons without spilling anything requires considerable skill and dexterity.

*How special knowledge and skill are obtained.*—The special knowledge and skill are acquired on the job by instructions from the employer.

*Mental and physical characteristics.*—Such work requires memory, because in waiting on the table the salesperson must remember the entire list of drinks and dishes as well as the order given. Neatness is especially essential in handling foodstuffs. Salespersons, and all others who handle foods and drinks, are required by the State Law to pass a physical examination.

*General educational requirements.*—Reading, writing and elementary arithmetic are the only requisites of such work. One salesgirl reported that she was a high school graduate.

*Promotion.*—There is no possible promotion.

*Source and selection of workers.*—Permanent work is frequently given to salespeople employed in selling Christmas novelties, but all employment is made through direct application.

*Seasonableness and overtime.*—The work is continuous throughout the season. Salespeople work in shifts, morning, afternoon and evening, which means some days long hours at a stretch.

*Hazards and inherent character of work.*—One worker reported a complaint that long hours of incessant serving was extremely tiresome.

*Wages.*—The weekly wage for sales work is five dollars.

### 5. The Drug Store

*The scope.*—There are twenty-two drug stores in Richmond, the largest of which has five employees besides the two proprietors. The other stores have only one or two employees except in summer when an extra worker is engaged to handle the soda fountain. Two drug stores were studied.

*Store organization.*—The work of the average drug store is divided into "three parts," the pharmacy, retail sales, and soda water fountain. The pharmacist is also the executive and he and the soda water fountain clerk, with the addition of a general employee, attend to all sales. This complicates the discussion of the drug store in a chapter on sales work since selling alone plays only a minor part. The large store with its exceptional organization has a wholesale department, in addition, which requires the employment of two boys for packing and delivering, and an office worker for keeping books, typing invoices and orders and filing. The small store studied had only one employee on part time for general sales with the addition in the summer of a fountain clerk.

#### The Pharmacist

*What the worker does.*—The pharmacist prepares all prescriptions, sells all drugs, sells anything in stock to customers, does all buying, keeps books and fixes prices, banks money, organizes store system, hires and discharges employees, trims windows and plans the arrangement of stock.

*Special knowledge required.*—The pharmacist must pass the state examinations and fulfill the legal requirements for experience and education. In addition he must be a good business man and accountant.

#### The Soda Fountain Clerk

*What the worker does.*—The soda fountain clerk serves ice cream, mixes soft drinks and ice cream dainties, and washes utensils. He reports when supplies are low, and sometimes makes other sales.

*Special knowledge required.*—Strength is required in moving the heavy five-gallon cans of ice cream, and, for this reason, girls are not employed at the counter. Neatness and speed in serving and in cleaning are equally essential.

### The Salesman

*What the worker does.*—The salesman helps the proprietor to unpack and tag all incoming goods and arrange stock on the store shelves and wareroom shelves. He makes sales of tobacco, toilet goods, writing materials, candies and such standard drugs as cod-liver oil, quinine pills and patent medicines, but is not allowed to touch any questionable substances or to put up a prescription; the latter in fact would be an illegal procedure.

*Special knowledge required.*—What the Minneapolis Survey study of department store work outlines in regard to what the person selling toilet goods and writing paper ought to know to understand the stock thoroughly, would apply equally well to the drug store salesman. He must know just where to draw the line between what he can and cannot legitimately sell.

*Special skill required.*—The only skill required is that which is required in doing up packages.

*How special knowledge and skill are obtained.*—The knowledge necessary is acquired on the job.

*Mental and physical requirements.*—No special mental or physical qualities are necessary but neatness of appearance is advantageous.

*General educational requirements.*—Reading, writing and rudimentary arithmetic are sufficient to perform the work involved. As a matter of fact, this drug store like most others, employs for part time and Saturday work, boys who are attending high schools or college, because they are thought to be the most intelligent and worth while workers possible to secure on a part-time basis.

*Promotion.*—There is no promotion possible unless the salesman studies to be a pharmacist. This sometimes occurs, but not often. This work is valuable for helping put boys through school and for testing out individual interest and bent toward salesmanship or pharmacy.

*Source and selection of workers.*—The workers are selected through the public school and by direct application.

*Seasonableness and overtime.*—During the winter these boys work only after school and in the evening. There is no definite

schedule of hours but the boys are not kept late. In the summer they are engaged the entire day. The salesman's hours are very long.

*Wages.*—The weekly wage is five dollars for sales work.

### 6. Cigar and Tobacco Store

*The scope.*—There are twenty-two Cigar and Tobacco stores in Richmond, in each of which the proprietor has all responsibility and does a large percentage of the actual work. They are assisted by one or perhaps two employees. Tobacco is also sold in most drug stores and in all hotel lobbies. The tobacco store represented in this study includes also a soda fountain.

*Store organization.*—The proprietor who does all buying, advertisement and managing; three salesmen who sell only tobacco, two boys at the fountain and one part-time worker for errands and substitute work, constitute the working force.

#### The Salesman

*What the worker does.*—The salesman sells tobacco to customers, unpacks stock and arranges it, and keeps the store in order.

*Special knowledge required.*—Knowledge of stock consists of familiarity with the names and characteristics of all brands of tobacco of which there are about thirty handled by this store. He has to know where the tobacco comes from and where cigars and cigarettes are made. He must also know whether a brand of tobacco is mild or strong, whether or not the cigar is a broad leaf cigar, of what the filler is made, of what mixture a cigarette is made, and whether the tobacco is imported or home grown.

*Special skill required.*—No special skill is required except the ability to open the case, hand over the package and make change.

*General educational requirements.*—Reading and elementary arithmetic are the only educational requirements.

*Promotion.*—The only promotion possible is an increase in salary. Only one change was made in two years.

*Source and selection of workers.*—The workers are selected by interview and trial.

*Seasonableness and overtime.*—Continuous employment is

required. The store is open from six-thirty a. m., until eleven p. m. The salespeople work in shifts.

*Hazards and inherent character of work.*—The employer interviewed said that the danger in this work was a moral one because the atmosphere of a store where men loafed about was hardly a good one for a young man.

*Wages.*—Sixteen dollars per week is the average wage for salesmen.

#### **The Soda Fountain Clerk**

*What the worker does.*—The fountain clerk also makes cigarette sales. He mixes soft drinks and keeps the fountains and utensils clean.

*Special knowledge required.*—Receipts for mixing drinks, how to make change and how to maintain order and cleanliness are essential.

*What the workers lack.*—The employer interviewed stated that it was very difficult to obtain boys who were both swift and neat. Their work lacks the immaculate and shining order desirable.

*Wages.*—The weekly wage is eight and ten dollars.

### **7. The Dry Goods, Notion and Furnishing Store**

*Large and small stores.*—The organization of a dry goods and furnishing store depends upon its size. In a large city store, the work may be highly specialized and salespersons selected according to rigid standards and qualifications in view of specialized work to be done and schemes of promotion. But in a city of twenty-five thousand, store organization must be flexible as selling is not highly specialized.

*The scope.*—There are sixteen dry goods and general furnishing stores in Richmond employing about seventy-five male and one hundred fifty female salespersons, in addition to fifteen men in building service. Two stores were studied in detail for this Survey, so the discussion is a composite picture of both stores. The very small dry goods store was not studied and compared with a larger one, as in the case of the grocery store, because it

presents no new phases of salesmanship, being practically the same as a department of a dry goods store.

*Store organization.*—The workers in dry goods and furnishing stores may be divided into five groups; executive, sales, office, delivery and building service. Only the first two groups are treated in this section of the report. The subdivision of the sales department depends entirely upon the size of the store. One store studied had seven main departments and the other had four. The departments in the larger store were as follows: Coat; suit and waist; lingerie, infant's wear and white goods; silks and trimmings; notions; gloves; stockings and underwear; carpets and draperies; linens and wash goods. Each department has at least three workers and sometimes six or eight. The forms used in recording a sale and the methods of wrapping purchases for customers to carry away, or for delivery, are the same in all departments.

*Store system of orders.*—The sales slip is made in duplicate by the sales girl. On the slip must be recorded the amount of goods, price per unit, total sale price, sales girl's number and date, and, if it is a charge sale, the customer's name and address. Every charge or approval sale must be O. K'd. by the proprietor or bookkeeper. Both copies of the sales slip are sent with the goods to the cashier and wrapper's balcony. The cashier takes one copy, foots the extension and makes change. She then files the sales slip on a spindle. The wrapper takes one copy, checks merchandise, and if correct, wraps it; if not correct, it is returned to the sales girl for correction. The wrapper includes her sales slip in the customer's package. At the close of the day, the cashier totals the cash received, checking the amount against the sum of the accumulated cash sale slips. The cashier turns over, each day, all slips to the bookkeeper for his final record of sales by departments and employees, and for posting charge accounts.

*Comparative opportunities of men and women in this field.*—As indicated in the Cleveland Survey Report on "Department Store Occupations," opportunities for men and women in this field are not identical. Differences might be summarized by saying that fewer men are needed—only fifty per cent. of the total number of dry goods and furnishings salespeople in Richmond are men, and that the men have larger opportunities for advancement than women—of the executive positions reported to the Richmond

Survey, eighty-five per cent. are held by men. Boys are started as salesmen in the leather, draperies, rugs or yard goods departments. They are promoted to floor director, to department head, or to buyer. Several employers stated that there is a need for more men in this field, and that boys do not see the opportunities in it and lack the patience to work on a salary of nine or ten dollars a week until they thoroughly learn the work. Women on the other hand, seem content to remain and work for much lower wages.

#### Facts Common to All Workers

*General duties.*—Every employee in this retail dry goods store is required to make sales at every counter, not only in her own department, but all other departments. For example, if there is no one in the notion department and a number of impatient customers are crowding the underwear department, the manager or proprietor may take workers from the notion department and place them in the congested sections.

*How special knowledge and skill are obtained.*—Special knowledge, which consists of two general aspects, knowing how to handle customers and knowing the stock sold, is obtained in this kind of business only after employment. The buyer is the main source of information about the stock, and, either by weekly talks or by informal discussion, he informs each person in his department about the line of articles sold. Sales journals are also sources of information, though used infrequently. The traveling salesman who sell goods on the spot, often talks to clerks in the department concerned, giving them points about the commodities he sells. Through constant experience in handling, sorting, and examining different articles, the observant salesperson learns a great deal. Trade journals and periodicals are most profitable sources of trade information.

*Mental and physical requirements.*—It is difficult to analyze exactly the distinguishing mental and physical characteristics in this line of business and almost impossible to determine special types of ability for each department. With the exception of fitting corsets and gloves, draping silks and serving, there is little manual skill required of the salesperson. She must be attractive, neat in appearance, and possess an agreeable manner of address.



*General education required.*—For this work, it is absolutely necessary to have the rudiments of a general education. Good penmanship and knowledge of business arithmetic are needed in writing sales slips. A good knowledge of English is essential to the day's work. Doubtless, high school girls would be preferred for this work, if salaries would justify their entering the field. At present graduates from the elementary schools and the country schools are in the majority.

*Promotion.*—Because of the general practice already described of shifting salespersons from one counter and department to another, with the resulting general knowledge of merchandise, workers are better prepared to take advantage of new openings than are salespersons in the highly specialized department stores of large cities. On the other hand, as there are so few changes during the year in Richmond stores, the possibilities of advancement, either within the department or between departments, is exceedingly limited. The store of this type in a small city, however, is an excellent training school for department store workers in a large city. Salary increases are slow and infrequent. The buyer's position is in advance of the salesperson, and above the buyer is the executive.

*Source and selection of workers.* Although the head of a department has something to say about the selection of workers, the proprietor always has the final word. Workers are selected by personal interview, by which means previous experience and education are ascertained. Workers are always engaged upon a probation basis. During the Christmas holidays and rush season, extra people are taken on in certain departments or for general work. If these new workers make good, they are sometimes retained, or they are given the first opportunity for permanent employment when vacancies occur.

*Seasonableness and overtime.*—The salesperson in this type of store usually works from eight a. m. to five-thirty p. m. on week days, and eight a. m. to nine-thirty p. m. on Saturdays. Work is continuous throughout the year and usually there is a vacation. Overtime only occurs at invoice periods and no extra remuneration is received for this work.

*Hazards and inherent character of work.*—There are no hazards in dry goods selling. The work requires considerable standing,

and, during the rush hours, workers may be under a nervous strain. This strain has never been accurately gauged and varies for each individual.

*Wages.*—It was found that in a group of thirty-nine salespersons in stores of this type, seventeen received between five and six dollars weekly; nine between six and eight dollars; ten between eight and ten dollars; and three over ten dollars; the maximum being seventeen dollars weekly.

#### The Executive

Most of the interesting and special features of work in such establishments are handled by the proprietors. It is the owner or manager, who in addition to supervising the organization and attending to matter of finances, buys merchandise, writes out advertising copy and superintends store and window decoration. He is the final arbiter of all questions of any importance and of disputes with customers. His relation to the activities of the entire store and to the work of his employees is as close as that of the department head to his section in a large city store. This fact is important because it affects the entire situation for both the salesperson and for the department head.

#### The Buyer

*What the worker does.*—In the small stores of this kind the prevailing rule is for the proprietor to do all the buying, but in the larger of the two stores studied, there were seven buyers, two of whom were women. They are responsible for all purchases for their departments, including the seasonable and the "fill in" or between seasons, buying. Twice a year they go to New York or Chicago to buy whatever they feel they can dispose of with profit. Between seasons they buy short orders from traveling salesmen. They also direct the work of their departments, superintend regular and bargain sales and stock keeping, arrange displays, and also make actual sales. They keep careful records of stock, sales and costs.

*Special knowledge required.*—The buyer must know the policy of the store and its methods, the tastes and characteristics of its customers and the amount of goods needed in each line. The latter is based on accurate stock records which show what kind of merchandise was popular and what was not. The knowledge

of merchandise is the buyer's greatest asset. This includes thorough information concerning textiles, fabrics, and styles, as well as buying markets and prices. As the buyer is the executive head of the department, he must teach methods of merchandising to salespersons.

#### The Salesperson

*What the worker does.*—What and how much a salesperson may do, depends upon the size of the establishment, upon the department, the season of the year and the time of day. All activities at any counter may be divided into three parts: taking care of stock, making sales and recording sales. The rudimentary duties of the salesperson have been analyzed in other studies and are found to consist of dusting, sorting and arranging stock, keeping a list of the articles needed for the buyer, waiting on customers, attending to delivery of packages, and filling out sales slips in the prescribed way. The order and range of duties performed in making a sale and showing goods are similar at all counters within and between departments. The methods of handling merchandise, however, inevitably vary. For example, the girl at the pattern counter does not show goods, as does the one who sells infant's wear, but plans costumes and explains the technique of laying out the pattern. Some ready-to-wear goods require fitting, and in other departments, the salesperson must also do some sewing.

*Special knowledge required.*—Recently the proprietor of a dry goods store stated that the content of the salesperson's job was seventy-five per cent. knowledge of merchandise and the other twenty-five per cent. business education and methods of pleasing the customer. What that seventy-five per cent. of knowledge consists of can easily be determined for any worker by expert analysis of the stock she is selling. In general, it consists of knowing the original source of the raw material in the goods handled, its composition and preparation, process of manufacture, the use for which it is designed, what care it ought to have and the basis of its price. For instance, the person who sells umbrellas ought to know how and where they are made, whether the silk used is pure, vegetable or fibre, how handles are decorated, how umbrellas should be dried and cleaned and what colors of parasols are fast. She ought also to have some knowledge of the prevailing fashion

in costume for which the parasol is an accessory and what accounts for differences in price, or why one parasol costs six dollars and another ten dollars.

Such a list of suggestions about stock knowledge might be prepared for each kind of merchandise. A number have already been outlined in Survey reports of other cities; the section on Department Store work in the New York State Factory Commission Report, 1915, the Chapter on Department Store in the Minneapolis Survey Report, 1915, and that of the Richmond, Virginia, Survey, 1915, and the Volume on Department Store Occupations issued by the Cleveland Educational Survey. The Minneapolis Report suggests the special knowledge involved in the following departments: yard goods, including cotton and woolen fabrics, linens, silks and mixtures, ribbons, lace and neckwear, handkerchiefs, trimmings, notions, patterns, art goods and needlework, ready-to-wear suits, coats, dresses, waists and children's garments, hosiery and knitted underwear, gloves.

The remainder of the practical knowledge needed by the salesperson consists of business arithmetic, English, penmanship, and such practical studies as will enable her to approach a customer determine what is desired, what range of prices the customer's purse will cover and how to substitute merchandise. This part of salesmanship has also been discussed in the above mentioned reports. In addition, some knowledge of sewing must be possessed by girls who sell corsets, ribbons, patterns, millinery and art goods.

### 8. The Shoe Store

*The scope.*—There are eight shoe stores in Richmond which altogether employ about thirty-five salespersons. One type study was made for this Survey; it employs six salesmen and two errand boys on part time.

*Store organization.*—The organization of this shoe store is very simple because the proprietor performs the work of the executive and office departments, and the delivering is done by boys who work after school and on Saturday. Each salesman has a special task assigned him in addition to this regular work, which occupies part of his time.

#### The Salesman

*What the worker does.*—In common with other such workers, the shoe salesman has to take care of his stock, keep it dusted,

sorted and put away. The distinguishing characteristic of this stock work, however, is its wide range. Every pair of shoes is boxed and placed on the shelves, marked with a symbol to denote the style, size, color, make and price. Hundreds of shoes are handled and put away by the salesman every day. Once or twice a week salesman fill in the gaps in the shelves from the wareroom. Every salesman, in turn, sweeps the store and dusts it.

He waits on customers, which means not simply showing merchandise, but in every case, fitting the shoe. To do this he takes the shoe off and examines it for hints of the customer's preference. He measures the foot with a special measuring stick to determine the size; selects the stock and fits the shoe, trying on as many pair as necessary. When the sale is made, the salesman records the amount in a cash register, makes change, or in case of a charge sale, places the sales slip into the register.

In addition, each salesman has special duties. One man trims the window; another buys notions, such as shoe buckles and rosettes, strings, buttons and shoe horns. A third salesman is the examiner of all new shoes, testing them for quality and comparing sizes and styles with the original order. A fourth salesman makes collections of bills from customers.

*Special knowledge required: Shoes.*—The employer interviewed in this study said he was unable to tell whether knowledge of stock or ability to get on with customers was most important because both were essential. Knowledge of stock includes facts about leather and stock; from what part of the animal the leather comes, whether it is split or whole; how it is tanned and prepared; about other materials, such as satin, velvet and canvas; and about the manufacturing process. The salesman must know centers of the shoe industry in United States and variations in their product, and steps in shoemaking. The salesman must know about the finished shoe, the kind of last, its style and how the shoe was made. He must know that prices are based on quality, pattern, style and distance traveled.

*Special knowledge required: Store stock.*—Exactly on what shelf and what part of the shelf a high-heeled, tan, oxford shoe, size four and a half, B, Queen Quality style, is to be found must be known by the salesman. He must be able to read the shoe symbol understanding the figures and letters used, of which there

are at least twelve entirely different combinations in the store studied. The salesman, who arranges the window, must know the demands of the season, and how to "show off" special features without overcrowding the window. The salesman who examines incoming merchandise must have an expert knowledge of leather and makes of shoe.

*Special knowledge required: Showing shoes.*—Method of showing shoes includes, first, knowing the trick of taking off the customer's shoes so that he or she will be tethered to the spot while a search is made for stock; second, knowing how to measure the foot accurately; third, familiarity with stock patterns in order to get them promptly; fourth, fitting the shoe, judging whether it is too long or too short, too narrow or wide, and whether the heel and the ball of the foot is placed where it should be; and fifth, discussing the merits of the shoe in a convincing manner so as to establish confidence in the mind of the customer. This method of discussion must be different in character for men and women; for children and youths. Finally, it involves knowing the peculiarities of the customer, for the success in the shoe store depends almost entirely on personal service. Further discussion of the content of this work ("Technical Knowledge Needed by Salespersons in the Shoe Sections") is to be found in Department Store Occupations published by Cleveland Survey.

*Special knowledge required: Foot anatomy.*—The expert shoe salesman with a working knowledge of the anatomy of the foot, can, by proper advise to customers about shoes best adapted to their feet, and by selecting and properly fitting the shoe, directly minister to the customer's health and comfort. Improperly selected and poorly fitted shoes are said to be one of the largest factors in causing broken arches, corns, bunyons and blisters. The shoe salesman may develop his work into a science which will not only pave the way to economic independence but to the rendering of great public service. The salesman should know all the bones and muscles of the foot, how to select and fit shoes to maintain bones and muscles in their proper places, how to select and fit shoes so as to correct abnormal conditions, and how to order custom made shoes for exceptional cases. A knowledge of children's feet and shoes is equally vital.

*Special skill required.*—A good salesman must have a light, firm touch in slipping on shoes and smoothing leather over the feet.

*How special knowledge and skill are obtained.*—Special technical knowledge about shoes may be obtained on the job, through the employer's instructions. Facts about shoes are learned also from salesmen representing manufacturers; from shoe trade journals and government reports, which the clerk may read when not engaged. School education about the anatomy of the foot, special and correct types of shoes, leathers and manufacturing processes, is a marketable asset for the shoe salesman.

*Physical and mental requirements.*—Without a high degree of patience, the shoe clerk, like the telephone operator, is but a tinkling symbol, not because all salesmen do not need this virtue but because customers in shoe stores are especially testy and difficult to handle.

*General knowledge required.*—Many of the salesmen now at work have only had elementary education, but the employer prefers in selecting new salesmen, to choose those with high school training because maturity, good address, training in system and English are needed in this work for highest success. As far as the actual performance of the task is concerned, however, reading, writing and arithmetic are the only essential school studies, according to the present requirements of the shoe salesman.

*Promotion.*—Promotion depends upon the growth of business. Many employees have gone from this small store to the field of traveling salesmanship or a large city store, which indicates that the store is a good training school. Within the organization, there is no position between the proprietor and the salesman, which means that increased salary is the only aspect of promotion.

*Source and selection of workers.*—New workers in this particular establishment have almost always been selected from part-time workers who have learned the business by working after school on Saturdays or during the summer vacation.

*Hazards and inherent character of work.*—It is freer work than being confined to one counter and yet not as tiresome as grocery store work because the salesman sits to serve the customer.

## 9. The Men's and Boy's Furnishing Store

*The scope.*—There are ten men's furnishings and haberdashery stores in Richmond, employing about twenty-three salespersons.

The Survey made a type study of one store in which there were two proprietors, two salesmen and two part-time workers who deliver packages and run errands.

### The Salesman

*What the worker does.*—Since the proprietor does all the distinctive things, such as writing advertisements, supervising every activity of the store, managing the finances and buying all stock, the work of the salesman is limited to unpacking and arranging stock, waiting on customers and trimming the windows under the direction of the employer, who also helps when necessary with sales and stock work.

*Special knowledge required.*—The salesman must know the stock to the same degree that other salespersons must know theirs. Knowledge of fabrics, textiles, linings and finishings are especially necessary. He must know how to fit overcoats, suits and hats, which means a complete knowledge of sizes and enough knowledge of tailoring to judge how the coat fits across the back and what the length of sleeves should be. He must know the makes of different garments and hats, and must know the reason for difference in price and be awake to all changes in styles.

*How special knowledge and skill are obtained.*—Direct information from the buyer, experience, and reading the trade journals are the chief means of receiving information.

*Special skill required.*—None other than those involved in making change or wrapping purchases are required.

*Mental and physical requirements.*—Nothing which distinguishes this salesman from other salesmen is required.

*General education required.*—Rudimentary education is sufficient.

*Promotion.*—There is no opportunity for promotion except as shareholder in the business.

*Source and selection of workers.*—Workers are selected from high school boys, who work part-time.

*Seasonableness and overtime.*—This work is not seasonal and requires no overtime.



### 10. The Millinery Store

*The scope.*—There are nine millinery stores in Richmond, all owned by women. The following tabular statement gives some idea of types of employment in the small shops in cities of the 25,000 population class. Two stores were studied.

Proprietors.....	11
Bookkeepers (on part-time).....	2
Trimmers.....	5
Makers.....	12
Sales force.....	19
Part-time workers under 17 years of age.....	3
Total.....	52

*Changes in business methods.*—In trimming, the millinery business has changed decidedly in the last thirty years. One milliner interviewed for this study described some of the changes. Thirty years ago a great many Quakers bonnets, caps and small hats were made with materials shirred on reeds instead of wires. They were sold for five or six dollars each. The trimmer usually received two dollars for her work. Since there were no such things as bandeaus for hats, a woman had to take the shape as it came. If it sat up on top of her head, well and good, if it came down over her eyes, so much the worse. Mothers and daughters bought hats of exactly the same shape, the only difference being that the daughter might have a red ribbon and the mother black. Milliners made very few wire frames. Leghorns, milan and neopolitan materials were then much less expensive than at present, and velvet and satin ribbons were purchased by the yard and used for bands and bows.

Problems of trimmings are now somewhat different largely because of new methods of work. Pattern hats in soft braids or velvet can be exactly copied now by the use of wire frames. The pattern hat is measured with great care and the frame made to correspond exactly. The milliner only copies a model, if she can make money on it, since it is expensive work and since only in that way can she make the expensive model pay. Pattern hats once out of style are worth nothing at all and often depreciate so that they are finally sold for perhaps one-fifth of the actual cost to the dealer.

*Problems of buying.*—Buying is done to-day by going to the market, just as it was thirty years ago; all flowers and novelties:

ckles and trimmings were bought of the wholesale dealer just they are now, although at a higher price. There were fewer ported flowers then than there are now and plumes were not good for the money as they are to-day. But no milliner ever de her own flowers or novelties.

One very great difference in buying nowadays is due to the iety of styles needed. Formerly a winter hat and a spring were the only hats the average woman purchased. Now the liner has to keep sport hats, fancy hats, tailored and plain s, large and small hats, all perhaps for the satisfaction of one ividual. She must have sport hats in pink and brown and en, black, white and black and white. One milliner said, "It d to be true that mother and daughter would come together and h buy a sailor hat; the daughter would wear hers tipped over : ear and the mother would wear hers straight, but to the mil- ar it was all one. Now the consumers read trade journals l women's magazines and are too intelligent to be satisfied withddy materials or old styles."

*Present methods of business.*—A number of model hats are ght each season, some of which are copied and some only apted. A number of hats are bought already trimmed, rest are shapes ready for trimming, as it is very rare now-ays for a milliner to make a hat. It is for this reason that e retail millinery business will bring increased opportunities to e salesperson rather than to the trimmer or maker.

*Character of occupation.*—Since the general problems of retail llinery are the same, no matter where the store is located, en though circumstances and types of customers vary inevi-ly, it follows that an analysis of the elements in the occupation uld obtain anywhere. The study of retail millinery in the neapolis Survey needs only to be changed in minor details apply directly to Richmond. A repetition of its detail is riously unnecessary.

*Store organization.*—In both stores studied the proprietor was re manager and milliner, supervising everything, directing the rk of the trimmer, making sales, buying models, shapes, trim-ags and materials. In one store there was in addition the head mmer, two makers, often a new girl who is learning the trade, d one or two salesgirls. The work of the trimmer and maker is died because it is often combined with selling and because

the trimmer in a store of this type might become buyer or salesperson in a larger establishment

*Differences between small shops and large city shops.*—Unlike the proprietor of the large city store, the milliner in the Richmond shops employs no designer and no regular apprentices. She has no office or office force, because, although she may have some assistance with her bookkeeping, she pays her own bills and keeps her customer's accounts. Certain problems of buying are also different, since much less imported stuff is used in the smaller town.

#### Facts Common to All Workers

*Source and selection of workers.*—There is very little change in the personnel of the stores from one year to another. New workers are employed through direct application or through personal inquiry on the part of the proprietor.

*Seasonableness and overtime.*—This is an occupation with two long seasons of twelve to sixteen weeks. The trimmer comes several weeks ahead of the time when customers are ready to buy. She joins the employer for the buying week after which she begins to prepare for the opening sale. Between seasons employees occupy themselves in such a way that they may return promptly. One head trimmer works in Cleveland between seasons, but in Richmond it is impossible to determine that the idle season is a hardship, since so many of these workers live at home with their families and do not seem to mind being unoccupied part of each year. A few milliners employ their salesgirls all year round. The season for the maker is somewhat shorter than for the trimmer and about the same for the salesgirl.

*Hazards and inherent character of work.*—The work is sedentary and confining.

#### The Head Trimmer

*What the worker does.*—The head trimmer helps with the buying each season. She also assists in directing trimming and sewing. She does the most expert sewing herself and practically all of the trimming. On some occasions she sells hats.

*Special knowledge required.*—Knowledge of styles, materials, designs and color combinations are required. Knowledge of sewing and all the intermediate steps in making a hat is the ground work of the expert.

*Special skill required.*—Sewing, manipulating ornaments, ribbon and wires are essential.

*How special knowledge and skill may be obtained.*—Experience, reading of style journals and school education in color harmony and designing are the chief sources of knowledge.

*Mental and physical requirements.*—Taste and color discrimination are required. No particular powers of analysis or memory are needed for the work according to present standards. Creative imagination, color harmony and design are assets of marketable value. The work requires no pattern and the individual uses her fingers and what taste and creative gift may be hers.

*General educational requirements.*—The only educational requirement is that which is necessary in meeting people as assistant buyer.

*Promotion.*—The position of the head trimmer is the highest in the milliner's shop.

*Wages.*—The weekly wage is from twenty to twenty-five dollars.

#### The Maker

*What the worker does.*—The maker bastes in linings, sews on braids and velvets, faces hats and helps in arranging stock.

*Special knowledge required.*—Sewing, wiring, how to get facings on without wrinkles, and blind stitching are required. The Minneapolis Report calls her, "the skilled mechanic," in contrast to the trimmer, who is the "artist in the shop."

*Special skill required.*—Ability to sew braids, buckram, and to hold goods smooth, and also to manipulate wire in making frames are required.

*How special knowledge and skill are obtained.*—Ordinary knowledge and skill in sewing is supposed to be possessed by a girl before she is employed, but after employment she must be trained to use particular materials on the job. Both milliners interviewed stated that they had almost always had a girl in their establishment who was learning how to become a maker and that in Richmond many of the head trimmers and a number of the milliners themselves have been trained on the job. School training in color harmony and design would be an asset.

*Mental and physical requirements.*—Color discrimination and ability to acquire deftness of fingers is essential.

*General educational requirements.*—Arithmetic, for making exact measurements is necessary.

*Promotion.*—The maker may be promoted to trimmer.

*Wages.*—Salary for this position is from six to ten dollars a week.

#### The Salesperson

*What the worker does.*—The salesgirl helps arrange stock and sells hats. She has to try hats on customers. She must suggest possible changes in the hat, its color or line, although for final settlement of a problem, she calls the milliner or head trimmer.

*Special knowledge required.*—The salesgirl must have a knowledge of the stock. This means in addition to what has been suggested before as coming under this head, source, method of making, name of producer and prices. She must remember and recall the different shapes which might suit the customer. She must be able to adapt the hat to the lines of the customer's face.

*Special skill required.*—Knack of adjusting hats upon the customer's head without ruffling her hair is necessary.

*How special knowledge and skill are obtained.*—On the job the salesperson may obtain technical skill, but school training in color harmony and design is essential.

*Mental and physical requirements.*—Memory and power of visualization is needed in studying line of hats on customer's head.

*General educational requirements.*—Reading and writing are needed for taking orders, accounting for making out sales slip.

*Promotion.*—The only promotion is an increase in salary.

*Wages.*—The salary is from six to ten dollars a week.

### 11. The Five and Ten Cent Store

*The field and store organization.*—There are two five and ten cent stores in Richmond, both branches of nation wide corporations, which together employ sixty-one people. They are organized very similarly and with a manager and assistant, stock workers, salespeople and office force. Women are employed exclusively in the latter capacities. One of these two stores was included in this special study.

### Facts Common to All Workers

*Source and selection of workers.*—The workers are selected by direct application and trial.

*Seasonableness and overtime.*—There is steady work throughout the year. Vacation is given with pay. The hours are from eight a. m. to five-thirty p. m. and on Saturday to ten p. m.

*Hazards and inherent character of work.*—Bad air in crowded and rush hours, and fatigue from standing at work are inherent in the work.

### The Salesperson

*What the worker does.*—The work of the salesperson in the five and ten cent store is to stand behind the counter and dispose of the merchandise asked for. She wraps packages and makes change from a cash register at her counter. She is responsible for keeping her stock in order on the counter and on the shelves below, where extra supplies are kept, and for reporting when anything is running low.

*Special knowledge required.*—The employer expects no knowledge of stock on the part of the girl, largely because all supplies are ordered in a stereotyped fashion, over which even the manager has little control, and because the store stock is cheap and customers seldom ask questions about it. The salesperson's information is largely a matter of wrapping up packages and making change, since all the stock handled is displayed on the counter with the price marked on a placard, except in the case of some special department like hardware, where the salesperson has to know the names of a great variety of screws and hinges, or in the millinery counter where the clerk helps select flowers and frames.

*Special skill required.*—Speed rather than skill in handling merchandise is demanded. This is especially true of candy sellers. The girl who sells sheet music must be able to play the piano.

*How special knowledge and skill are obtained.*—The necessary skill and knowledge are obtained on the job, except for the music counter, where the salesgirl must know how to play the piano before being employed.

*Mental and physical requirements.*—Ability to acquire speed in handling goods and wrapping packages is required.

*General education required.*—A knowledge of reading, writing and simple calculations is necessary.

*Promotion.*—Promotion may consist of increased wages and shift from the sales to the office force.

*Wages.*—Of seventeen workers reporting wages received, weekly wages are as follows:

1 worker.....	\$3.50
2 workers.....	4.00
5 workers.....	4.50
5 workers.....	5.00
2 workers.....	6.00
1 worker.....	6.50
1 worker.....	7.00

#### The Stockman

*What the worker does.*—The stockman unpacks express and freight packages, sorts stock, marks and puts away stock, carries all supplies from the basement stockroom to counters upon receipt of stock orders from salespersons. He does all odd jobs and sweeps the store every night.

*Special knowledge required.*—The stockman must know how to check merchandise against the invoice, the systems used in putting away stock and in keeping a record of what goes in and out.

*Special skill required.*—Care in unpacking and carrying goods, and in sweeping and cleaning is sufficient.

*How special knowledge and skill are obtained.*—Knowledge and skill are acquired on the job by instructions from the manager.

*Mental and physical requirements.*—The “ability to go through a grind,” strength for moving heavy boxes and health to stand working in a basement are necessary.

*General education required.*—Very little general education is required. Reading, writing and arithmetic are essential for efficiency in the work, and eighth grade graduation or some high school education is necessary.

*Promotion.*—The stockman may be promoted to assistant manager.

## 12. The Furniture Store

*The scope.*—There are seven furniture stores in Richmond, which employ thirty-eight salesmen, four repairmen, and eight deliverymen. Two stores were studied for the Survey.

*Store organization.*—Both establishments were definitely organized into five divisions: Executive; office, sales; set up and repair; and delivery. Women are employed only in the office. The same system of recording sales and of taking orders is very similar to that already described in the dry goods store, except that no cashier is employed and that all purchases are delivered. In the store the sales department is subdivided, not according to occupations, into buyers and salespersons because the proprietors handle all the buying, but according to commodities sold: Furniture, carpets and stove departments.

### The Sales Department

#### Facts Common to All Workers

*General duties.*—There is no more specialization of work in this type of store than in the grocery or dry goods store. Each salesman must be able to sell anything in his department and to substitute in others during the noon hour and rush periods.

*What the worker does.*—The salesman in every department must arrange and dust the furniture in his section and keep the floors clean. One man on every floor plans the distribution and arrangement of furniture exhibits. He helps direct deliverymen in moving furniture. He must show his merchandise to the customer, explaining every detail about it. When a sale is made, he makes out his sales slip and arranges with the bookkeeper and the credit man for extension of credit and for installment payments. He must also be on the alert for possible new clients.

*Special knowledge required.*—The special information about his stock which the furniture salesman must know, has an interesting and varied content. Department store occupations in Cleveland already mentioned in the previous discussion, offer an outpouring of information on upholstery, which, although meant for the department store salesman of yard goods, is equally useful for the salesman of upholstered furniture.

In addition to knowledge of textiles and designs, the salesman must know woods, their sources and kinds, veneers, varnishes, stain and paint, construction of furniture, what parts



are glued and what are screwed, durability, styles and periods, use for which each is designed, relation of style of furniture and architecture of houses, important furniture factories and their relative merits, care of furniture, oiling and polishing.

Knowledge of rugs and carpets is a large field and experts devote their entire lives to mastering it. A rough sketch of such information includes the names and source of various makes of rugs and carpets with the distinguishing quality of each in design, dye, mixtures, weaves, process of making, relative value and merit, and suitability of colors and patterns according to various styles of house furniture.

Information about stoves is special and almost technical since the salesman must know exactly how they work, kind and amount of fuel required, how heating apparatus is arranged and regulated, how stoves are cleaned, and the advantage of each part and device.

A salesman ought to be able to demonstrate what he is selling, to adjust lamps, to open table arms, and to show all the contrivances of a desk or kitchen cabinet. He must find the distinctive merit or "talking point" of every piece sold, and be able to answer questions about usefulness, fragility, durability and suitability for a given purpose of one piece of furniture as compared with another.

*Special skill required.*—Skill required for such work is neither distinctive nor definite and involves only making adjustments of such articles as lamp globes and pneumatic sweepers, rolling and unrolling carpets, and shifting furniture about.

*How special knowledge and skill are obtained.*—The skill just described may be acquired in the regular day's work. Special knowledge is gained gradually through experience, through reading the trade journals for which the proprietor subscribes, and through direct talks from the proprietor who buys merchandise. There are an infinite number and variety, the reading of which would be of great value to the salesman. The Toledo Public Library has published a splendid bibliography of fifty books, all of which are suggestive to the salesman. One Richmond employer provided leaflets on salesmanship, advertising and furniture, which salesmen are required to read whenever not otherwise engaged.

*Mental and physical requirements.*—The same qualities of appearance and manner which make a salesman a success in other

stores, are needed here. Some mechanical ability is an asset; good taste and color discrimination are especially needed by the window trimmer. The credit man ought to have power to analyze financial facts and summarize them.

*General educational requirements.*—Few of the salesmen in these stores are high school graduates. If they can speak correct English, make out sales slips accurately and have sufficient education to enable them to read and understand books and journals on furniture they are equipped for work. Further education is an asset and rewards in advancement are sufficient to induce men who possess it to enter this business.

*Promotion.*—One salesman has become confidential credit man. On each floor of one firm there are heads of stock who are responsible for reporting when new merchandise is needed and to such positions a salesman may be promoted but otherwise he can only advance in salary. Service in one store requires special duties which offer opportunity for increased responsibility and salary.

*Source and selection of workers.*—When a new man is needed, inquiries are dropped among traveling salesmen. One employer stated that he never took a man from another similar store in town. Sometimes the employees know of applicants. Workers are interviewed and then tried out. Previous experience in furniture is such an asset that salesmen possessing it are always chosen in preference to a "green man," even though the latter was better educated. Sometimes men are promoted from the delivery or repair force to the sales department.

*Seasonableness and overtime.*—Employment is continuous throughout the year. Extra people are sometimes taken on at Christmas time. Overtime is often demanded because no customer may be left while a sale is pending. If a salesman is made late to meals, he is given money to purchase them down town but no extra pay. Hours are from seven a. m. to six p. m. and Saturday to nine-thirty p. m. Vacation with pay is given in one store and salaries are not reduced on account of illness.

*Hazards and inherent character of work.*—There is no hazard or strain of any kind. The character of this work is bound to be good, with spacious and attractive quarters, opportunity to move about or sit down when not occupied and association with a rather selected type of customers.

*Wages.*—Partly because the sales department is composed of men, the wages in this work are higher than in most retail stores. One employer quotes a minimum wage of eighteen dollars. Schedules of individual workers show that seven receive more than fifteen dollars per week.

### The Special Worker

*What the worker does.*—In one store, in addition to the regular work of selling, three men had special duties. One of them assisted the proprietor by checking all new acquisitions of merchandise against the invoices received. On the basis of original cost and margin of profit which the firm is accustomed to allow, this worker fixes the price of each article, and marks the price ticket.

The second man attends to the credit ledger and keeps in touch with payments due. To him are referred all questions of the financial standings of customers. He keeps the confidential ledger which gives the loss and gain of the company. He is also efficiency expert and is constantly improving the methods and system used in the establishment.

The third man is a window dresser. Every week the decorations are changed entirely. Once a week is thought often enough since many buyers from the country and even in town do not have the opportunity to see the windows more frequently than that.

*Special knowledge required.*—In addition to the knowledge of merchandise and salesmanship, these three workers must have special information. The business manager must keep in touch with markets and market prices; know what his competitors are charging; be aware of the rise in cost of lumber or in the wages of factory labor or cabinet workers or changes in prices of imported goods. He must know how to compute a fair and yet profitable price for each article.

The credit man must know how to determine the credit of an individual and how to keep credit records. He must know when it is good salesmanship to be lenient about an account and when it is bad business and what new customers would be desirable to attract. He must understand bookkeeping sufficiently to calculate the cost and profit of every department and the efficiency of each salesman.

The window dresser must understand the medium of advertising. What the Minneapolis Survey says of the art of window

trimming seems especially applicable to the requirements of this business. "A window trimmer needs to be an all-round man, and to have some knowledge of color, painting, decorating, displaying goods to good advantage, sign writing and of architecture and modeling."

#### Repair and Unpacking Department

*Organization.*—Each of the stores studied had two men in this department. Their work was allied to sales because they are sometimes promoted to this department, and to delivery because the assistant repairman helps the teamster, and to building service because they help attend to the furnace and help in cleaning. The rest of their work, however, is entirely distinct.

*What the worker does.*—The worker in this department receives furniture delivered to the warehouse. He must uncrate it and report if anything is injured or broken. Most merchandise arrives "knocked down" and the repairman must set it up, polish or oil it and get it in ship shape for the sales-room. If there is some light injury to the article, he repairs it. He is responsible for all the furniture in the warehouse, which he must keep at the proper temperature. In busy times the assistant repairman helps the teamster in delivering purchases. Both men are alternately responsible for keeping up the furnace in the store, for washing windows and general cleaning work.

*Special knowledge required.*—This workman is skilled and needs to know practically everything that the cabinet maker knows. He must know the construction of furniture thoroughly, otherwise he will not be able to uncrate it without damage or to set it properly. Only a skilled carpenter can discover without dissections, how to put together or adjust any kind of article from a camp to a buffet.

This worker does not have to know what the salesman does about upholstering, but he must understand woods to exactly the same degree. He must know the quality of the furniture and the kinds of finishes and oils in order to polish and properly care for it.

Since part of this worker's duty is to check the incoming shipment against the original invoice, he must know the forms used by the company and how to report mistakes. What is needed to understand the furnace and for proper methods of cleaning will be found in Chapter XXIII, "Household Service."

*Special skill required.*—This is considered skilled work and requires the same manual deftness and technique needed by the cabinet maker.

*How special knowledge and skill are obtained.*—One of the workers in the store studied was a cabinet maker by trade and his assistant had learned everything he needed for efficiency as his helper in the department. Probably school courses in wood-working and carpentry would be of great assistance to any one desiring to enter this field.

*Mental and physical requirements.*—Such a worker must be strong physically in order to handle the large pieces of furniture to be uncrated. He must have ability to analyze his problem;—that of determining the construction of a piece of furniture he has never seen before which is hidden by a crate, and afterwards to discover how all its different parts fit together.

*General education required.*—Elementary school education is necessary for efficiency in this work since records have to be written, invoices checked and written orders followed. More advanced education is not needed except for promotion to salesmanship.

*Promotion.*—The only advance possible within the department is from assistant repairman to head repairman and for further promotion the employee must be shifted to sales work which sometimes occurs.

*Source and selection of workers.*—If the assistant teamster has been taken on in this department, it is because his skill in handling furniture has already been partly tested. Personal inquiry is the method used in obtaining new workers, but, as a matter of fact, few changes are made. The head man in one store has been in that position since the business was first organized.

*Seasonableness and overtime.*—Employment is regular and continuous. In the spring and fall these workers are required to put in extra time, if necessary, without extra pay. Extra help is hired during the holidays.

*Hazards and inherent character of work.*—There are no hazards in this employment and its inherent conditions are the same as in a regular carpenter shop.

*Wages.*—Weekly wages are from thirteen dollars and fifty cents to fourteen dollars.

### 13. The Jewelry Store

*The scope.*—Richmond has six jewelry stores, which according to the Survey census report, employ nine workers. One type study was made for the Survey.

*Store organization.*—The jewelry store is distinguished from other stores by the dual character of its method of handling merchandise, which requires the employment of skilled jewelry repairmen as well as salesmen. The repairmen repair watches and jewelry, set jewels, and do engraving. Each of these skilled workmen are also required to make sales and are usually called upon to sell their specialties. The store studied has one watch repairman, one jeweler, one engraver who works on part time, and one general salesperson, besides the manager, who is also a general salesman.

#### The Sales Department

*What the worker does.*—Besides their specialties of repair work and managing, workers in the sales department wait on customers. The general saleswoman takes care of stock, dusts, arranges everything in the store, and makes sales. If a customer wishes an expert opinion of jewels, watches or silverware, the proprietor or one of the repairmen is called. Orders for jewelry designs, for engraving and for special stones or silver patterns are taken by salespeople.

*Special knowledge required.*—The content of this work is highly specialized. Knowledge of precious stones is so difficult that in large firms one expert devotes his entire time to one kind of stone. In a store of this kind, however, such subdivision of effort is impossible, and jewels and watches are bought by the manager who relies upon the judgment of experts in the larger company dealt with. The jewelry repairman knows, however, enough about stones not only to set them artistically, but to discuss them in a convincing manner with the customer. He can explain their respective perfections, show off their iridescence, answer questions concerning their value and give minute details of their history and process of polishing.

Selling a watch is primarily a matter of convincing the customer of its reliability, since the mere showing of patterns and styles, jeweled or plain, in silver or gold, is a thing any salesperson could do. The man who understands the construction of watches,

who repairs and regulates them, is the one who can best present the case to the customer, because his knowledge is thorough and technical.

The sale of silver is not so difficult. It is fairly easy for a salesperson to learn how silverware is made, the process of plating, what plates are best, the superiority of one make of silver over another, the various patterns and styles, and the producing firms which are most reliable. Considerable information about social customs and fashions in table and tea service and bric-a-brac and the place silver plays in the scheme of decoration for boudoir or parlor, is necessary to explain the purposes of certain articles and designs. How to take care of silver and what polishes are good, is necessary information which the salesman must have.

Patterns and makes of china and the particular usefulness of each and every piece is also comparatively easy to grasp. How necessary it is for good salesmanship, however, to know thoroughly the process and the manufacture of china is illustrated by the experience of a girl interviewed for this study who was asked by her customers why each piece of a certain popular kind of ware contained imperfections which looked like tiny dents. Being unable to answer, she consulted the traveling salesman representing the producing company, who, ignorant in his turn, had to refer back to the factory located in England. When the salesgirl was finally able to tell her customer that the dents were caused inevitably by the process of firing the china because the little prop upon which it rested in the oven left its mark on the surface, she established perfect conviction and satisfaction in the customer's mind.

*How special knowledge and skill are obtained.*—The engraver and jewelry and watch repairmen acquire skill and knowledge by serving as helpers to experienced men. School courses in mechanical and free-hand drawing and designing would be very helpful to such workers. Their apprenticeship in this work prepares them also in the thorough knowledge of stock which makes them valuable salesmen. The manager also offers information about merchandise which he has acquired in his buying trips. The Toledo Public Library has suggested a list of thirty-one books, all of which are valuable for persons employed in jewelry stores.

*Mental and physical requirements.*—Sensitive hands, deft in handling fragile and tiny objects, are an asset in such work.

*General educational requirements.*—Good spoken English is the chief requirement in jewelry salesmanship. Highly skilled repairmen would be valuable even if they had no general education. The employer interviewed, however, stated that in taking on new workers he preferred those with a high school education.

*Promotion.*—The repairmen and salesmen may receive increased salary and responsibility as the business develops. There is only one purely executive position in the store, and opportunities for promotion are limited.

*Source and selection of workers.*—It is very difficult to secure trained repairmen, and if a new one is needed, the jeweler has to scour the country. An engraver or salesman may be accepted as an apprentice and gradually trained to be adaptable anywhere in the store. No apprentices, however, in this field are employed in Richmond.

*Seasonableness and overtime.*—Employment is continuous throughout the year. Extra workers are employed at Christmas time. Overtime is of negligible quantity and hours are from eight a. m. to five-thirty p. m.

*Hazards and inherent character of work.*—Since this store, which deals in the fine things of "civilized life," must provide attractive quarters for their display, the workers in it are especially favored with good conditions. Repair work is hard on the eyes, but mere selling involves no strain.

*Wages.*—A skilled watch repairman commands twenty-five dollars; a jewelry repairman twenty dollars and a general salesperson about fifteen dollars per week.

#### 14. The Florist Shop

*The scope.*—There is only one retail flower store in Richmond. The horticultural side of the florist's business is partly treated in Chapter XXVI, "Home and School Gardening."

##### The Sales Department

*What the worker does.*—There are two salesmen in the store, both of whom make sales of flowers and plants to customers, put up flowers in boxes for delivery and help take care of the stock in the store. They wire flowers, make corsage bouquets and funeral wreaths. One of these salesmen is also a decorator who



trims the window of the shop and is sent out on assignments to decorate houses, churches, dinner tables and clubs for ceremonies and festivities.

*Special knowledge required.*—The salesman must have at his command the entire range of prices of plants and flowers and the system and policy of the company regarding extending credit and arranging for large orders. No salesman could become useful in a shop unless he had first had experience in the greenhouse. He must know flowers in order to keep them at the proper temperature and give them the right amount of water in the store; in order to repeat to customers their names and to give information about their care; and in order to select the best variety for a specified purpose, since color and lasting quality, stiffness or grace of flowers and plants make or mar the success of the customer's plan. In addition to this knowledge, the decorator must be able to wire flowers and build designs. He has a very special field of work since he must plan floral pieces and schemes of adornment. This means that he should be able to make a sketch of his plan, that he must understand something of architecture, that he should possess the power of artistic color blending and the knowledge of social custom and etiquette affecting decorations for various occasions. Very often the customer places all responsibility upon the decorator for producing appropriate effects, whether for a funeral, a debut or for a bridal luncheon. Probably the situation is more difficult when the decorator is not left free but hampered by demands from ignorant or inartistic customers. In this case the decorator must know how to subordinate his aesthetic to his commercial sense without giving a hint of his suffering.

*Special skill required.*---There is a definite and special skill in handling flowers without twisting or breaking them while arranging them firmly in a bouquet, or upon a design, or gracefully displaying them in show cases.

*How special knowledge and skill are obtained.*—Such salesmanship requires a definite apprenticeship of several years in the greenhouse, planting, transplanting, pruning, spraying and nursing plants and flowers. Horticulture as a school study is valuable but must be supplemented by practical work. After this period, a salesman is ready for work in the store under supervision of someone who can give suggestions about methods of approaching

and pleasing the customer. But the decorator must have a course of special training in floral design and decoration. This must be learned by further apprenticeship to a decorator. Practical work might profitably be accompanied by the study of books on architecture and design.

*Mental and physical requirements.*—The scientist and the artist must blend to make a superior flower salesman or decorator. Little analysis or memory is required but rather imagination, aesthetic sense of color and harmony, and creative impulse.

*General education required.*—Advanced education is an asset to a worker in this field because of the selected group of customers with whom he deals.

*Promotion.*—From the position of salesman the only possible advance is to that of decorator.

*Source and selection of workers.*—Apprenticeship in the greenhouse gives the proprietor an opportunity to test the ability and taste of potential salesmen and to select the most promising men for promotion to that department.

*Seasonableness and overtime.*—Work is continuous throughout the year. There is a good deal of overtime which is not remunerated, during the busy season. In the summer slack season there is no deduction of pay and vacations are given.

*Wages.*—The employer stated that a salesman receives eighteen dollars weekly. One apprentice earns six dollars a week.

*What the workers lack.*—Employees accepted at the greenhouse show great lack of the rudiments of education; simple arithmetic, spelling and English. Further training is absolutely necessary for these workers and some of them seek to acquire it at night school.

### 15. The Book and Stationery Store

*The scope.*—There is only one bona fide book store in Richmond, although other stores keep both books and stationery. Wall paper is also on sale in this store but this department is entirely separate.

*Organization.*—Besides the proprietor, two sales people are employed, one of whom also keeps the account books. Both these workers are girls and they divide responsibility for stock between them. Their activities cover selling anywhere in the store.

### The Salesperson

*What the worker does.*—Both saleswomen do some buying, one books and the other stationery and engraving, entirely from catalogs, order sheets and traveling salesmen. They sort and arrange stock with an idea of featuring new productions, novelties and best sellers. They help invoice stock and fix prices on articles for sale, except in the case of books whose prices are fixed by the publishers. They make sales of any kind, although each one keeps to her own special department unless she is needed elsewhere. Orders are taken for books, engravings and for letter heads. Girls record cash sales on the cash register and charge sales by writing the amounts on the customer's file card in the credit catalog.

*Special knowledge required.*—These salespeople must know more about the stock they handle than do most others, because they are buyers and must know wholesale as well as retail prices, and the comparative value of different manufacturers in methods of doing business, prices and products. They must also know the tastes and desires of their customers from the buyer's standpoint. The girl who sells books is often called upon for advice about them and the more widely read she is the better. She must at least be assured of up-to-date catalogs and methods of securing information, and must know how to send in orders. The clerk who sells office supplies must know something about bookkeeping and office work, to understand articles sold. The clerk who sells stationery and novelties must know social customs in order to suggest what note paper to buy, what engraving to use and what table decorations and favors to advise.

An outline of the kind of course which would prepare a salesperson for this special kind of position is found in the section on Department Store Work in the Fourth Report of the New York State Factory Investigating Commission. The Minneapolis Vocational Education Survey offers an excellent discussion of the content of the special information required by the salesperson at the stationery counter.

*Special skill required.*—No special skill is required, save those involved in operating the cash register and wrapping purchases.

*How special knowledge and skill are obtained.*—This information is gathered by talking to traveling salesmen when buying, by reading books and reviewing journals and by studying the customer.

and catalogs. The basic information about types of books and general literature must be obtained in school, before the worker is employed. Part of the Library worker's course would be of cash value to the book salesman.

*Mental and physical requirements.*—Because of the character of the merchandise dealt with, the salespersons must be unusually intelligent, although not necessarily physically strong.

*General educational requirements.*—The people who deal at the book store belong to the intelligent element of the community and therefore must be served by generally well informed salespersons. One of these workers has had some college training and she feels that she makes use of it every day in fulfilling the possibilities of her work.

*Promotion.*—Increased salary and responsibility are the only possibilities of promotion.

*Source and selection of workers.*—Very few changes occur in this store. If an opening occurs, that worker, who is known to the proprietor or salespeople, would be preferred to others equally well educated.

*Seasonableness and overtime.*—Work is not seasonable and there is no overtime. Hours are from eight a. m. to six p. m. Vacation is two weeks in length. Extra workers are engaged at Christmas time.

*Hazards and inherent character of work.*—Such work is confining, yet more active than department store work.

## 16. The Retail and Wholesale Hardware Store

*The scope.*—There are eight hardware stores in Richmond, which employ twenty-five salesmen. Two of these are wholesale establishments and one of them, which has also a retail department, was included in the type study for the Survey.

*Store organization.*—The main branches of the organization are executive, office, sales, delivery and shipping.

The sales force is divided, not into two main divisions of wholesale and retail, but into sections according to the commodity sold: Cutlery and sporting goods; builders' hardware, comprising all articles of hardware used in the construction of any form of building; house furnishings, consisting of cooking utensils, refrigerators, stoves and vacuum cleaners; paints, stains and oil;

victrolas; factory tools used in all branches of manufacturing; factory supplies including all articles used in the equipment and up-keep of a factory or shop, pertaining specially to its power, machinery, heating and lighting; blacksmith, comprising all tools and raw materials used by the blacksmith trade in the building of new and repairing of old work, including implements; implement department, including gas engines, windmills, machinery, and wire fencing; iron and roofing department, including iron and steel bars, structural iron, shafting, metal and prepared roofing and sheet tin.

#### Facts Common to All Workers

*Special skill required.*—A high degree of mechanical ability is needed in setting up and adjusting agricultural implements, inasmuch as most implements are received unassembled. The marked similarity of many parts adds difficulties in the assembling process.

*How special knowledge and skill are obtained.*—A salesman is helped by a general knowledge of mechanics received by trade training or experience in machine or repair shops, or by taking school machine shop courses. Some men, by keen observation and careful study, have obtained all their knowledge in the store. The wide awake salesman obtains information from experts who periodically call upon the dealer.

The traveling salesman acquires his knowledge of merchandise by working in the stock room or by selling in the store.

*Mental and physical requirements.*—Mechanical ability, which means power to comprehend the mechanism of all the merchandise handled, is necessary for this salesman. As hardware and agricultural implements are heavy, the salesman must be physically strong.

*General education.*—Reading, writing and arithmetic are essential.

*Promotion.*—From salesman to department head is an established line of promotion.

*Source and selection of workers.*—Interview and trial are the accepted methods for the selection of workers.

*Seasonableness and overtime.*—Work is continuous throughout the year. Hours are from seven a. m. to six p. m. week days and nine p. m. Saturdays. There is practically no overtime.

Salesmen of the road have no regular schedule of hours. They usually find it impossible to work on Saturday and return to the store for conferences.

*Hazards and inherent character of work.*—The work requires one to be very active physically. There are no special strains or hazards. The men on the road are traveling constantly and are, therefore, subject to all the hazards involved in auto bus, interurban and steam railroad transportation.

*Wages.*—Weekly wages are from ten, fifteen, eighteen, twenty-five to thirty dollars.

#### The Local Salesman

*What the worker does.*—The salesman helps set up, adjust and arrange stock; demonstrates merchandise to customers and makes sales, records sales by writing out slips which are shot into the office through a pneumatic tube; takes orders for wholesale delivery; receives from the office shipping orders for wholesale merchandise from his special department; assembles orders, marks the slip to indicate how the consignment is to be shipped and sends it to the warehouse for packing. The salesman who is head of the department reports when stock is low and gives suggestions to the manager who is the buyer.

*Special knowledge required.*—The knowledge required by these salesmen is more technical in character than that of any others, yet considered, because their customers are not casual buyers with mere general knowledge, but workers in the trade and experts who know just what they want and the exact purpose which the purchase must serve.

The expert salesman will interest himself in the customer's needs and then distinguish between the general and specific in order to fill the needs accurately. The importance of special knowledge may be illustrated by citing the fact that the sale of a wrong valve may cause a busy shop to shut down for several hours and cause the manufacturer the loss of fifty dollars time to save one dollar in original cost. The sale of ten cents worth of improper lubricating oil may ruin an electric motor costing many dollars. The sale of the wrong ingredient may ruin the finest decorative job.

The farmer's wife is not likely to buy a churn or a washing machine until she sees it demonstrated. A skilled painter is not

easily convinced by a mere salesman behind the counter that a new kind of paint is the kind he should buy. The salesman must know not only how his merchandise is made and who makes it, but must explain every detail of the use. This means comprehension of the operations involved and includes much more than ordinary stock knowledge. The inability of the clerk to meet a situation always creates suspicion in the mind of the customer and will retard or make impossible the sale. The man who sells implements to the farmer has to explain just how the implement is to be used, how it is adjusted and how it behaves in action.

#### **The Traveling Salesman**

*What the worker does.*—There are six traveling salesmen, compared with twenty-one in the store. They have only a small zone to cover in visiting retail stores and occasional individuals. They show catalogs and samples to the customer, discuss merchandise and prices, and take orders. These they write up on the proper forms and mail back to the main office, with which they must constantly keep in touch.

*Special knowledge required.*—The traveling salesman must know stock so well that he can explain it from the catalog or printed list and become enthusiastic over the image he makes. He must know how to fill out forms and the value of getting information from the customers about the transportation of his consignment. This employee has more to know than the store salesmen about methods of approaching and handling the customer, since all the advances have to come from the salesman. The salesman must also be keen enough to get criticism from the retail storekeepers or individual customers of the merchandise sold in order to test its value and practicality and to make use of suggestions to improve the character of the output.

### **17. The Wholesale Dry Goods Store**

*What the worker does.*—Although the wholesale dry goods establishment visited for this study has some store workers, the most important salesmen are those who travel to represent the business. They cover a zone which touches two or three states; they visit retail stores, many of which are in the country districts. They plan their own schedules, sell goods from price lists and catalogs, report their orders and their activities to the office every

**day.** Salesmen must get new customers, visit old dealers, adjust complaints and "boost" the sales.

*Special knowledge required.*—First and foremost the salesman must know his stock. He must know all materials handled; their names, their characteristics, the raw materials used, how they are woven or manufactured, on what the price is based, and for what use each is best adapted. Only if he has this thorough, special knowledge can he explain his stock from a catalog, or wax eloquent over the relative merits of percale and gingham and their relative selling qualities in view of the prevailing styles. He must understand prices thoroughly and the relation between price and transportation, since to customers near other large wholesale centers, he can equalize the freight charges for the purpose of obtaining the order.

*Special skill required.*—Penmanship and ability to make out reports are required.

*How special knowledge and skill are obtained.*—The special knowledge may only be acquired on the job, in actually handling and selling materials. For this reason, salesmen are recruited only from the stock department where experience, reading and talking with other workers have taught them what they know about textiles, store system and types of customers.

*Mental and physical requirements.*—Since the personal element in this work is such a large factor, the personality of the salesman must be pleasing. A man too finished in manner would not do for this work, for customers are simple and a "good, plain man" is apt to get better results.

*General education required.*—Salesmen for this house are not particularly benefited by a high school education. They must know how to read, write and do rudimentary but accurate figuring. An eighth grade education is entirely sufficient for the actual work. Grammar and spoken English need not be of a high grade, because of the type of customers interviewed, since he must run no risk of making the customer think he knows less or is not so good as the man serving him.

Common deficiencies of workers are found to be lack of accuracy and poor penmanship.

*Promotion.*—Stock boys are promoted to road salesmen. The only other possible promotion is increased salary.



*Source and selection of workers.*—Salesmen are chosen by trying out boys in the stock department and taking the most intelligent and trying them in sales work.

*Seasonableness and overtime.*—Employment is continuous throughout the year. The schedule of hours is necessarily irregular.

*Hazards and inherent character.*—Work is outside almost entirely, and there are no hazards other than those involved in continuous travel.

### 18. Mercantile Delivery

*Importance of the field.*—Practically all retail and wholesale houses have a delivery department. In addition, there is a merchants' delivery system in Richmond, organized to deliver packages for small stores and merchants who have only occasional need of such service.

*Numbers engaged in delivery service.*—In delivery service men are employed on full time as follows, in mercantile establishments of various types and in addition to many boys on part time before and after school and on Saturdays:

Grocery.....	38
Meat.....	9
Bakery.....	10
Confectionery.....	2
Drug.....	6
Dry Goods and Furnishings.....	7
Mens' Furnishings.....	3
Furniture.....	8
Jewelry.....	1
Florist.....	1
Books and Stationery.....	3
Musical Instruments.....	3
Fuel and Lumber.....	39
Office Sales.....	12
Hardware.....	8
Produce.....	3
Leather.....	5
Wholesale Dry Goods.....	9
Wholesale Groceries.....	4
<hr/>	
Total.....	171

*Scope of study.*—In the study of twenty establishments covering mercantile sales, methods of delivery were included. It was found that eight establishments owned motor cars or trucks; two stores, horses and wagons; seven firms sent all packages by errand boys; one used the merchants' delivery and two made no provision whatever for delivery service to customers.

*Character of the work.*—Delivery is made either by a horse and wagon, by motor trucks, on bicycle or on foot. The proprietor of an establishment which has a delivery department, owns his own delivery cart and horse or truck and the deliveryman is entirely responsible to him for its care.

#### Facts Common to All Workers

*Common knowledge.*—All deliverymen must know the store system, how to make out the necessary forms and how to route packages properly, and they must be familiar with the names and numbers of the city streets.

*How special knowledge and skill are obtained.*—Every boy who enters this field must bring with him a body of prerequisite knowledge of how to drive a car or a horse, in addition to familiarity with the city and surrounding territory. Familiarity with the system and policy of the particular establishment where he is employed, can only be acquired on the job.

*Mental and physical requirements.*—The amount of strength needed depends upon the character of the merchandise handled. Men moving heavy furniture must be strong, but those carrying dry goods packages need not be. All deliverymen must have good memories and judgment.

*General educational requirements.*—Reading and writing and sufficient arithmetic to make change for a c. o. d. package, are the only school courses which this work demands.

*Promotion.*—In seven of the seventeen establishments, which have delivery departments, practically no advancement of workers was possible. In the drug store, for instance, there is no connection between the delivery and store service except that of personal contact between the errand boy and pharmacist. It happened, however, that a delivery boy in one store, put himself through school, secured his training and became a pharmacist. In five stores there are, according to statements of the proprietors, opportunities to advance from the delivery to the sales

department. The two furniture stores offer promotion from delivery to repair department. The errand boy sometimes has the opportunity of becoming a salesman. Delivery work is, however, generally acknowledged to be a good example of a terminal job.

*Source and selection of workers.*—In the group of stores studied, deliverymen were chosen on direct application and chosen by interview and trial.

*Seasonableness and overtime.*—The amount of overtime required depends upon the establishment. In grocery and flower stores hours are likely to be very irregular. One store has a margin of two extra workers who are only called upon in rush hours. Extra deliverymen and boys are employed during the holidays.

*Hazards and inherent character of work.*—This work has a slight element of danger as accidents are always possible when driving a team or running a motor. There are possibilities of strain in heavy lifting.

#### **The Deliveryman who Runs Motor Cars**

*What the worker does.*—All the motor cars used in mercantile delivery are gasoline cars, except one which runs by electricity. The deliveryman routes his packages at the store, loads them on the truck, delivers them to houses, receives money due on c. o. d. packages and reports back to the store. He is responsible for keeping his car clean and in good order. He makes minor adjustments but he must report to the garage any serious difficulties. Three establishments which use cars also send their deliverymen to the freight and express stations to get packages and freight. Deliverymen must roughly check the consignments on the spot for loss and damage.

*Special knowledge required.*—The deliveryman must know as much about a machine as a good chauffeur. He must understand how to run the car, how to make minor adjustments, how to clean it, and when to call expert service.

*Special skill required.*—Special skill consists of steering and running the car, and, in certain lines such as the furniture business, in handling merchandise without damaging it and placing it in the customer's rooms without injuring the wall and stairs.

### The Driver

*What the worker does.*—The deliveryman who drives a horse collects and delivers packages in the same way that the motor driver handles his. He hitches and unhitches the horse, feeds and cares for him and cleans the wagon.

*Special knowledge required.*—This worker must know how to harness, hitch and drive a horse as well as how to care for him.

*Special skill required.*—The driver must be skillful in order to drive the horse carefully and swiftly.

### The Errand Boy

*What the worker does.*—The errand boy is usually a part-time worker who delivers packages after school and on Saturday. He rides a bicycle or walks, and, as he carries but few packages, his routing is a simple matter.

## 19. Training for Salesmanship

### Present Status of Training

*How obtained.*—For a specific salesmanship position, there may be two possible ways of being trained: By a school course, day or evening, preparatory, correspondence or part-time; or by actual work in the store. At the present in Richmond, the training salespersons receive, is obtained while working on the job through talks with buyers, traveling salesmen and customers; through experience in handling merchandise; and by reading trade journals and publications.

*Public school courses.*—At present among the cities offering day courses in salesmanship in high and vocational schools, are New York, Boston, Minneapolis and Indianapolis. Instruction in practically all of these courses is preparatory for department store work for girls, and part-time employment in the morning, afternoon and on Saturday, in a department, is one of the usual features of the courses. Many evening schools in Indiana and other states offer instruction in salesmanship for those already employed in stores.

*Private and corporation school courses.*—In recent years, a number of private tuition schools of salesmanship have developed and flourished. The usual method of instruction is by either correspondence or group study with a local leader, supplemented

occasionally by a representative from the "home office." These courses afford a market and advertising medium for books and pamphlets published by the school.

Many corporations, in order to develop the needed efficiency among salesmen in marketing their products, have made provisions of various types for instructions in selling. In department stores, youthful workers are usually grouped in classes held during the slack hours of the day and instructed by a woman, who is usually either an employment agent or general welfare worker. Large manufacturing and wholesale concerns employing male traveling salesmen, often hold short conference courses, during which salesmen ask questions of department heads, exchange opinions and listen to lectures by specialty men. Many large corporations have made permanent provisions for special training for salesmen.

### Variable Factors in Salesmanship

*Inherent differences in qualifications of salespersons.*—This study of salesmanship in the retail stores of Richmond, has indicated the whole range of work required of men and women of widely varying mental and physical endowments, and educational qualifications. A few examples cited from this report will but serve to illustrate this point. The hardware salesman must possess mechanical ability in order to set up and adjust machines and implements. The dexterous hands of the jewelry salesman are not needed for success in the grocery store, nor is the girl selling notions required to have the keen color discrimination and the artistic taste of the salesperson at the silk counter. Good looks are of more importance to the girl at the neckwear counter than to the one who sells hosiery. Artistic taste is not so essential to the man who sells leather goods as to the clerk in a florist's shop.

*Inherent differences in commodities sold.*—The wide range of commodities which must be sold in Richmond to meet the need of production, office work and consumption, occasions, of course, an equally wide range of materials used in producing the goods sold. It has been said that seventy-five per cent. of the success in selling consists of "knowledge about stock." The reader will immediately imagine the wide variety of materials handled about which salespersons in each respective line must be informed, by recalling that among the retail stores of Richmond are those selling

groceries, hardware, jewelry, shoes, dry goods and furnishings, ready made garments, furniture, flowers, and candy and ice cream. It may truthfully be said that in meeting the consumption of the people of any community, all the peoples of the world must contribute the best of their productive activities.

*Inherent differences in education required.*—For salespersons in book stores, a college education is an asset; for furniture salesmen, a general education rich in historical content about manners and customs of various people and periods and their homes and furnishings is valuable; and the demonstrator of a complicated agricultural implement is greatly profited by a technical education. On the other hand, it can scarcely be honestly contended that a general education beyond the sixth grade is needed for selling in the five and ten cent store, or that an education beyond the ninth grade is a marketable asset for the grocery clerk.

### Constant Factors in Salesmanship

*Fundamentals underlying study of merchandise.*—While actual differences in stock knowledge required of salespersons handling various commodities, are vital and oftentimes great, there are certain fundamental basic elements underlying the study of merchandise: Knowledge of the industries of the United States and Europe; centers of production of commodities of various types; source and composition of raw materials, and methods of transferring raw materials into finished products, including study of color, pattern and design.

*Economics of mercantile trade.*—The content, of the economics of mercantile trade about which all salespersons should be informed regardless of the commodity sold, includes the following: The world's producing, buying and selling markets; rudiments about traffic and transportation; basic reasons for variations in market prices; the relation between wholesale and retail trade; the basis of fixing selling prices; and methods of displaying and advertising goods.

*Technique of meeting customers.*—The types of customers with whom salespersons have to deal are constant, regardless of the purchase the customer seeks to make. The classification reported in the Minneapolis Survey is suggestive: "The customer looking for a definite thing; the one not knowing just what to buy; the customer who is just curious about what is for sale. The first

type of customer must be convinced that the salesperson can show either the very object desired or something better; the second type is open to persuasion; and the third must be attracted and won."

### Suggestions Concerning Training for Salesmanship

*Salesmanship, a splendid field for men.*—The widespread public attention focussed upon schemes for training young girls for department store positions, has had a tendency to create the impression in the minds of young men that the field of selling is of most worth and promise to young women. The Richmond Survey shows that men predominate in the field, at the ratio of three to one, and that in only two types of stores, the dry goods and five and ten cent stores, are women in the majority. Practically all positions of major responsibility in the Richmond stores are held by men. Probably this condition will continue to exist. Nor is Richmond peculiar in this respect. According to the report of 1910 census of occupations of residents of Indiana, there were about 90,000 salespersons in the State, seventy per cent. of whom were males. The following census figures about numbers employed in this field in the State are illuminative:

	Males	Females
Salespersons in stores.....	26,639	10,647
Retail dealers.....	32,093	1,237
Brokers and agents.....	8,338	1,210
Commercial travelers and demonstrators.....	6,854	361
Total.....	73,924	13,455

Schemes for training for salesmen must be broad enough to adequately throw open the possibilities of selling to promising young men, and teach, in so far as possible, the basic aspects of merchandising necessary for entrance, proficiency and promotion.

*The school's responsibility.*—Classes in salesmanship for youths who have not yet entered the field as wage-earners, and for those who are salespersons but who seek organized instruction, must be organized on an entirely different basis. Classes for the former must include the fundamental common elements of mercantile salesmanship, and, for the latter, the distinctive problem peculiar to commodities sold and store organization. There is no question but that the public schools have a direct responsibility in offering

preparatory courses for those who seek this type of employment. Although this Survey has revealed some of the constant as well as variable factors involved, the study was neither broad nor intensive enough to submit a complete bill of particulars which might be accepted without challenge. A detailed and intensive study to determine the solid, common ground underlying all sales work, should be made at once, since the field is so promising and public interest is so great. No texts are yet available which touch the real problem, since practically all works on salesmanship discuss only such common requisites as reliability of character, ambition, patience and tact, all of which underlie salesman's success no more than that of a doctor, a mechanic or a nurse. A reliable, helpful text cannot be written until the intensive study suggested is made.

*The course of the future for those preparing for salesmanship.*—To understand the composition and manufacturing of stuffs, textiles, silverware, rugs, etc., a salesman must have a knowledge of applied chemistry; to appreciate and explain patterns in textiles and jewelry, fashions of hats and costumes as well as to arrange displays on counters and in windows, a salesman must have training in design, color and harmony of line and space. English, penmanship and arithmetic are necessary for sales records, and practical economics.

A study of applied economics, including mercantile traffic and transportation, is necessary in marking goods and setting prices. Commercial geography and industrial studies are necessary in obtaining a knowledge of the world's producing, buying and selling markets and manufacturing processes. The course of the future must contain at least all these basic elements.

These suggestions constitute an hypothesis, that there might be worked out for salesmanship, a course in a way analogous to a general course in pedagogy, psychology, sociology and history, now required of all who enter the teacher's profession. No such courses at present are available for salesmanship. The vague and vaporous books on personality, conduct and advertising, which are current in schools of salesmanship and correspondence courses, at present offer a mere starting point for the salesmanship course of the future, which will take such generalities for granted and begin with specific studies.



### **SURVEY COMMITTEE RECOMMENDATIONS**

The Survey Committee, recognizing the breadth of the field of mercantile sales, and its importance to the entire community, including salespersons, proprietors and the buying public, urges that in the Junior High School a general information course be organized throwing open the possibilities and requirements of this broad field for both male and female workers.

As a part of the broad commercial education proposed for the commercial department of the Senior High School, one unit should be the elements of merchandising, indicated in the text of this report on Mercantile Sales.

In all probability, as our knowledge of the field of mercantile sales increases, it will be possible and desirable to offer vocational preparatory courses in the Senior High School for young people desiring to enter this field. Such courses, however, must deal largely with manufacturing processes, knowledge of stock and technique of store procedure, rather than generalities regarding the theory of selling.

Salespersons in Richmond would be greatly benefited by part-time day and evening courses in salesmanship. The establishment of such courses for those already employed is urged. Enrollment and classification of studies would have to be made on the basis of experience in the trade and goods sold.

Proprietors of all types of large and small stores in Richmond would greatly appreciate and profit by courses in business organization and methods. This need cannot be met locally by the Richmond Board of Education but will have to be done on a University Extension Basis. The need for such courses is referred to Indiana and Purdue Universities.

## CHAPTER XIX

### COMMERCIAL EMPLOYMENT: TELEPHONE SERVICE

*Not a local utility.*—One of the most important public utilities perfected during this century is the telephone. The life and business of every community is so dependent upon it, that it has become scarcely less essential to social living than facilities for lighting and heating. Like the telegraph and railroad, the tele-



The Modern Telephone Office is Equipped with All Modern Conveniences.  
Note the Automatic Telephone in the Center of the Picture.

phone binds communities together in an endless chain of constant intercommunication. It lends greater speed, accuracy and personal influence to all former means of communication, until every phase of business has been revolutionized to gain the advantages its use has made possible. In a city like Richmond, the telephone has become the link which most intimately binds

it to all other cities and country districts within a radius of a hundred miles. Its use has become, not only locally constant, but so universal that in a few years it has standardized in some measure the occupations involved. This is especially true of the long distance or toll operator, the accuracy of whose work, is analogous to that of the telegraph operator.

*Departmental occupations.*—The telephone service involves the construction, maintenance and operating departments. Only the occupations employing women and girls are here studied. Women have everywhere a definite share of work in the telephone service. In other cities studied they are found to be employed for office work in larger numbers than men and have exclusive possession of the traffic or operating room. In Richmond where the automatic system is used, operators are employed only for Long Distance lines, for Information and for "Trouble." Clerical work is discussed in Chapter XX, "Office Service."

#### Facts Common to All Workers

*Mental and physical requirements of workers.*—Telephone work as performed either by the trouble clerk or toll operator requires nervous energy. A girl of phlegmatic temperament cannot maintain the high speed tension required to handle her number combinations and keep in mind the stage of advancement of each call which she is "putting through." At the same time she must have nerves that are strong and steady to enable her to answer in an unruffled manner half a dozen incoming calls while she attends to those already received, which is another way of saying that the operator needs the quality of patience. She must have accurate and sensitive hearing, good eyesight and a naturally good voice. Her sense and muscular co-ordination must be above the average since good service depends upon the instantaneous response of the hands and the brain to varying lights and sounds. The girl with heavy clumsy hands would be at a great disadvantage at the switch board.

The purely mental side of the work involves no analysis, and to a slight degree, as compared with other kinds of work requires such mental endowments as imagination and reasoning. It does, however, require an adequate memory and the power of organizing detail sufficiently to follow a definite system of work. Mechanical ability has a real value to the trouble clerk.

*General education required.*—Because tickets, tally cards and

report sheets must be filled out, involving considerable calculation of rates, a toll or trouble operator must be a good penman and must understand rudimentary arithmetic. Spelling and English are very important, and especially, good spoken English since an operator is frequently called upon to transmit messages. Geography is a basic study which operators need in locating directions and localities in "handling" a call. When a subscriber asks for a certain town, the operator must know at once whether it is west or east in order to connect with the nearest exchange. But since certain physical and personal qualities of the workers are of prime importance, the statement is probably accurate that an ordinary elementary school education is sufficient for success in this work.

*Source and selection of workers.*—Few changes are made from one year's end to another. Usually a friend of a girl already employed is taken on, if there is an opening. She is given an interview and must be able to refer the company to someone who knows her, for a character recommendation. She is then given a trial. Girls experienced on a local switch board, or, better still, in long distance operating, are preferred to inexperienced girls.

*Seasonableness and overtime.*—Although each group of workers is on a shift which will be described later, the hours are definitely prescribed and there is no overtime. Such work is not seasonable, but continues throughout the year.

*Hazards and inherent character of work.*—There is no danger of any sort from machines. The work is sedentary and confining. It is not possible to tell without a series of accurate laboratory studies whether there is much nervous strain or impairment to health in telephone operating. Certainly it is true that there are times when the work must be exhausting. Attention must be maintained constantly at a certain pitch and since the personal element of voice and manner enters into every telephone call, the girl cannot relax unless the number of calls diminish. For this reason the telephone company gives rest periods of a few minutes once or twice a day, as the operators desire.

### The Toll Department

*Four positions in the department.*—In this department there are four distinct positions: (1) The toll operators, always the newest girls in the stage of initiation, who answer all local calls from

pay stations and all those from farm subscribers; (2) the toll operators who may take either incoming or outgoing calls; (3) the chief operator who handles the information board except when needed for other work, supervises the department and teaches new operators.



The Operating Room with the Automatic System Only. Six Operators Required. They Put Through Farm and Long Distance Calls.

tors; and (4) the night operator who has charge of all the lines information throughout the night. Besides the chief operator there are eight day operators and one night operator, only five of whom are usually on at a time.

#### Facts Common to All Toll Operators

*The apparatus used.*—Every operator in this department must know how to manipulate a switch board. This mechanism is familiar to almost everyone in its elementary form found in private branch exchanges in every factory, store, hotel and railroad station of any size. The board in the central telephone office is large and complex, although a toll board, which is the one used here, is much smaller and no more complex than a local

operating board. The operator must understand the meaning of the lights which flash in and out on the boards, how to operate the keys and how to "plug in" with the metal terminal rubber tube which fits into any one of the "jacks." Every operator has a certain bank of numbers or "jacks" before her, although she may at any time help other operators by picking up their numbers on the "multiple." When the light appears she places the plug in the "jack" to connect the subscriber with the central switch board, then opens the key which connects the operator with the subscriber, finally placing another plug, complementary to the first, in its "jack" to connect the operator with the number desired.

*Special skill required.*—The skill required consists merely in manipulating the rubber tubes and keys, placing the plugs in the jacks, and using whatever devices are accessory to her keyboard, such as stamping and timing toll tickets. All mechanism handled is small and such rapidity is required that the operator's hands must act, not only swiftly, but independently of each other.

*How special knowledge and skill are obtained.*—Special knowledge and skill in telephone operating may only be acquired on the job. The telephone company expects to offer the necessary training, and, from the very beginning, pays a salary of eighteen dollars a month to those who are learning. The chief operator teaches the girl rudimentary facts about switch board operating on a dummy board, or on a section of a real board not in use; she also gives the beginner rule books and codes to learn and conducts recitations just as a private tutor would in coaching a pupil. In a larger company, instructions are given to classes in a regular recitation room with full dummy equipment and the instructor devotes practically all her time to teaching. In Richmond it is said to require about three months for an operator to become sufficiently initiated to be useful at the switch board. At present the beginner is usually the farm operator.

*Promotion and wages.*—As has been indicated, the newest operator is started at answering farm calls, then promoted to toll operating. The chief operator is the head of the department. Operators are started at eighteen dollars per month while learning and increased to twenty-five dollars after three months. Those who make good receive gradual increases until thirty-two dollars a month is reached, which is a fixed limit. Sunday work is paid at the rate of fifteen cents an hour for a short day and one dollar for the long day.

*Hours.*—The hours of the shifts may be summarized as follows :  
3 come at seven a. m. and work until five p. m.

2 come at seven a. m. and work until twelve noon, and are free from then until five p. m., when they return and work until nine p. m.

1 comes at ten thirty a. m. and works until eight p. m.

1 comes at eleven thirty a.m. and works until nine p. m.

The chief operator works from nine a. m. to five p. m.

The night operator comes at nine p. m. and works until seven a. m.

Each worker, except the night operator, has to work one Sunday during the month, alternating an entire day's work with a short day of four or five hours.

*Rotation of operators.*—With the exception of the night operator, the workers in this department interchange positions at the board so that, unless there is a new employee at the farm subscriber's board, who does not shift her place, each operator is able to do the other's work. The girls take turns substituting for chief operator in giving information, but when the "chief" is away the most experienced toll operator becomes the arbiter of mooted points.

### The Farm Operator

*What the worker does.*—The farm operator takes care of over three hundred stations since all calls from rural subscribers are made through the central office in the same way that all local calls are handled where the automatic device is not in use. She also takes all local calls from pay stations. She must give in case of fire or "mad dog," six short rings called the "emergency ring," which reaches every rural station. Every night between four and five she receives the official weather report from the United States Weather Bureau. (This is a striking instance of modern co-operation between government and private corporation, to annihilate distance and bring the results of scientific research immediately to thousands of scattered individuals.) If the subscriber calls for long distance, the operator merely "plugs in" to connect him with the toll board.

*Special knowledge required.*—The farm operator must know how to give the emergency ring and how to transmit the weather report, how to pass on a long distance call to the toll operator, and how to operate the dial in order to call a Richmond number

### The Toll Recording Operator

*What the worker does.*—The girl in this position takes all incoming calls from Richmond subscribers for long distance to her stations. She answers, "This is long distance," and as she asks questions of the subscribers, she writes down upon a ticket the subscriber's name, number and the person wanted in the other city. She looks up the rate and route, then says, "one moment please," and after placing the ticket in the stamping machine to record the time of receiving the call, she passes the ticket to the toll line operator and by plugging in from her board connects the subscriber with the toll line operator.

*Special knowledge required.*—For incoming calls the operator must know the proper form in which to make out tickets. She must know rating and routes; how to look them up and how, when necessary, to figure combination tolls. Most rates have already been determined and printed in a schedule which hangs in front of the operator. Rates to unfamiliar or unknown places must be found in either or both of the company's books. If the rate is still not available, she must find the location of the town on the map and compute the rate by laying a graduated measure on the chart which is scientifically drawn to scale and shows the different rate zones in Indiana. The rule indicates in what zone the located town falls. Such procedure is of course an unusual necessity but one which every operator must be ready to meet.

If the subscriber does not know the number of his party, the operator has to look it up for which necessary provision is made by keeping telephone books on hand from every possible point in the United States. When the ticket is completely made out with the names, numbers, rates and stations, the recording operator must know how to stamp it in the time recording machine. She must know the prescribed code for carrying on telephone work. She must answer for instance, "This is long distance," when the subscriber rings in. If she says merely, "Long Distance," the subscriber might think the phrase an interrogation, requiring the answer "Yes, I want long distance," which exchange involves the waste of several precious seconds.

### The Toll Line Operator

*What the worker does.*—A girl in this position, and there are always two and sometimes four, makes the connections between the subscriber and the party wanted in the other city. Taking



the tickets from the recording operator, she rings the long distance operator in the city wanted, and if it is a call which must be passed on through another long distance station, she rings the operator in the larger station on the route of the call. She then repeats the information from the ticket and asks, according to the distance involved, for the kind of line wanted; a "long haul" for distant points and "very long haul" for extreme distances. It is the first operator, taking the original call, who figures out the kind of line necessary. She does this by consulting the company's books which state, on a basis of scientific computation, what kind of line is wanted to carry a call with the greatest efficiency. The operator in the other city receiving such a call has no figuring to do. She simply says, "Right," and fulfills directions, passing the call on to the line specified.

The toll line operator also has, on occasion, to repeat messages in case the party wanted has no telephone. She has to devise ways of getting a call through. For example, in case the party wanted has no telephone the operator tries to find a neighboring station to which he might be summoned. When the call is completed, the operator places the ticket again in the stamping machine, of which there is one for every operator, and stamps the time at which the call was finished, computing the exact time used by the party calling. The toll line operator also receives calls to Richmond from other stations, makes the connections for the subscriber by use of the automatic dial and co-operates with the operator sending the call in trying to find the party or in securing some information concerning him.

For long distance and local pay station calls, tickets are made out according to prices. The operator tells the person calling to drop in the required number of coins. She holds the party until the money is dropped. Each coin gives a different ring, which she must be able to distinguish, as well as to tell if the sum is correct. She hands these tickets to the bookkeeper.

*Special knowledge required.*—The operator must know geography in order to be able to decide quickly which direction a call must be routed and which is the right station to ring. She must also understand what circuits to use and what kind of line to ask for.

She must understand the company system of toll tickets. She must know how to handle human beings of every kind and how to advise methods for getting a call "through." This often

involves patient waiting first for one party and then for the other to be ready to talk to each other. She must know what to refer to the chief operator.

The long distance operator must be familiar with the code method of communication with other operators, using uniform symbols instead of complete sentences. She says for example, "Mr. Brown, U X L W," instead of "Mr. Brown is out, is not in the city and I left word for him to call."

It is the policy of this particular office to require the operator who arrives first in the morning to go over all toll tickets, and, of those calls which were lost the day before, to select the ones likely to go "through" if tried again. The operator calls up the original party and asks if she may try again to call her number. Thus thousands of calls are saved for the company throughout the year. The operator must understand salesmanship in telephone work. Her voice, her manner, her willingness to please are all assets for the sale of service. There are also definite schemes for obviating the loss of a call. Aside from doing everything she can to accomplish a call, the operator tries to find someone else to talk if the party called for is out. For instance, the operator who says, "Mr. Brown is out but Mrs. Brown will talk," at once presents a picture of a woman waiting at the telephone. If the person calling has any imagination, he will gallantly hasten to relieve Mrs. Brown of the suspense and the call is saved for the telephone company. If the call does not go through successfully, the operator must know how to report the reasons for the failure on the ticket. She must also know how to use the stamping machine for recording time.

### The Night Operator

*What the worker does.*—The night operator has full charge of the department, information, local and long distance calls, all of which she handles from one switch board by the use of the "multiple." After a certain hour she arranges her board so that a bell will ring instead of a light flashing, and she can either read, do fancy work or sleep as temperament dictates.

Part of her work is to sort out all toll tickets which have been filled during the day. She does this for the purpose of determining what calls went through and which were lost or cancelled, as well as the number of calls handled by each operator. She sorts the tickets first by stations and then by operators and computes the total amounts.

*Special knowledge required.*—Everything which the night operator must know, except the preparation of reports on the toll work of the previous day, have been described in the above discussion. There is nothing complicated in this task and the method of doing it is easily acquired.

### The Chief Operator

*What the worker does.*—Aside from being in charge of the entire department, the chief operator answers all information calls which sometimes amount to twenty-five hundred a day.

All long distance calls, where the party is unknown or cannot be found, are referred to her and it is her task to think out ways of reaching the desired person. She must take all calls which are reported "do not answer." She refers them to the trouble clerk and waits for a report which she repeats to the calling operator.

All adjustments are made by the chief operator; mistakes in rates, disagreements with operators in other cities and dissatisfaction expressed by individuals using the telephone. She makes out all schedules of work and hours for operators. She supervises every detail of the activities of the operating room. All delayed calls are referred to her after a certain time has elapsed and she takes them up with the chief operators in other stations. She is also responsible for the instruction of all operators, and to some extent for their selection. She is responsible herself for mastering, and then teaching, all changes in the system of operating.

She prepares reports every day from the rough notes given her by the night operator on the calls handled the previous day. On her report sheet she records for each operator the number of hours on toll, the number of messages which "went through" and the number of messages lost, the percentage lost, the average messages received per hour, what lines were busiest, and the attendance and tardy record of each worker. She makes out weekly statement from this time sheet, a monthly statement and summary every thirty days.

*Special knowledge required.*—The chief operator must know every process of local and long distance operating "from start to finish" and know it with the best possible technique. A knowledge of all the rules and regulations of the company is required. She must be so ingenious that she can invent ways of getting a call through where other operators have failed. In

case of emergencies, she must know what to do. It is also necessary that she be able to teach new operators the entire field of duties and to coach other operators in any new codes and rules which may be adopted by the company. She must realize the value of personal acquaintance with the other chief operators for the purpose of securing accommodations and special attention. An opportunity of making such acquaintances is afforded by state meetings of chief operators.

## Trouble Department

### The Trouble Clerk

Two girls sit at the trouble operating board and all calls which do not go through for any reason are referred to them; that is when a subscriber cannot get a number he rings trouble, or when long distance calls do not go through the operator asks always for a line test from the trouble clerk.

*What the worker does: Clerical work.*—The duties of the trouble clerk are of two kinds, clerical and mechanical. The trouble clerk places on a form sheet the telephone number of the party wanted, also the exact time; she then says, "Wait a moment," and tests both lines for trouble by the testing device. If there is trouble, she locates it as being inside trouble or outside trouble by the testing device which indicates the nature of the difficulty. If it is inside trouble, she makes out a ticket recording the time the trouble was reported; for instance, "Get W No" means "Subscriber keeps getting wrong number." She records her own number and the two telephone numbers affected. When the trouble has been located and adjusted, the ticket is returned to the trouble clerk, and she checks on the sheet what lines are now O. K. in a column which indicates that it was inside trouble.

If the trouble is outside, she pulls toward her a file of the subscribers, which stands just back of the operator's board; turns to the right number in the file, and, withdrawing the card, she marks the data upon it. When the linemen have located and repaired the trouble, the operator marks in the proper column on the report sheet, and also upon the subscriber's card which is replaced, the fact that the line is O. K.

Each day's work is summarized for a daily report sheet which divides the telephone lines up in groups of thousands. Locating the number to be reported on in its proper group, she marks down what she calls the "code trouble." These daily sheets are entered

after two days in a book in which are recorded the condition of every subscriber's telephone throughout the year. She follows the same form as used in the daily sheet, recording for each telephone number the fact that trouble was reported; the kind of trouble it proved to be; the date; and when it was repaired.

The condition of the line throughout the whole year may be seen at a glance by following this record. 1. If it is blank or has only one or two notations, the line has been in good condition; 2, if it is black with figures, it may have been in trouble a great deal; or, 3, if it is covered with "M 3" notations, it has been reported busy very often. In this last case the record is made a basis of sales. The record of "busy" becomes a "talking point" for an additional line to the subscriber who is brought up in person to confront the book. There he sees the actual record of how many people have desired to get his number during the year and were unable to do so only because it was busy. This is urged as incontrovertible proof that he needs an extra line. Thus it is seen that the yearly record of "trouble" is very valuable as providing a check on not only efficiency, but in inducing sales.

*What the worker does: Mechanical work.*—The testing apparatus consists of a regulation telephone desk with switch board where subscribers calling trouble ring in. On each side of it are duplicate testing boards. Each board is equipped with thirteen keys like ordinary operating keys and an electric Voltmeter, whose dial the needle is seen to swing across a scale from 1 to 7.

When trouble is reported, the first move of the clerk is to test the condenser by opening the Voltmeter key and the reversing key. The condenser will be discharged and then charged in the opposite direction which causes a slight deflection of the needle. This is called the "condenser kick." If this occurs, the line is perfectly clear and nothing further need be done. If trouble is indicated by test one, the operator then opens the ground in key and the reverse key to test each side of the line. If there is no movement of the needle, the line is clear. A battery reading is taken to determine if the exchange batteries are affected or if the subscriber's batteries are in trouble. If the reading indicates connection with a battery foreign to the line in use, it may mean a crossed line. A normal battery reading is 48 Volts per meter.

If trouble is indicated, the operator opens the "bridge key"

to cut the line in two in order to test the trouble as being inside or outside of the exchange. If inside trouble is indicated, she determines, if possible, what the nature of the trouble is by a few simple tests. Then she rings a bell to summon the switch man to adjust the trouble. If outside trouble is reported, the operator again determines what the nature of it is. It may be a ground wire, a crossed line, an open line, or a short circuit. A short circuit reading would show about sixty-five depending upon the distance of the trouble from the exchange.

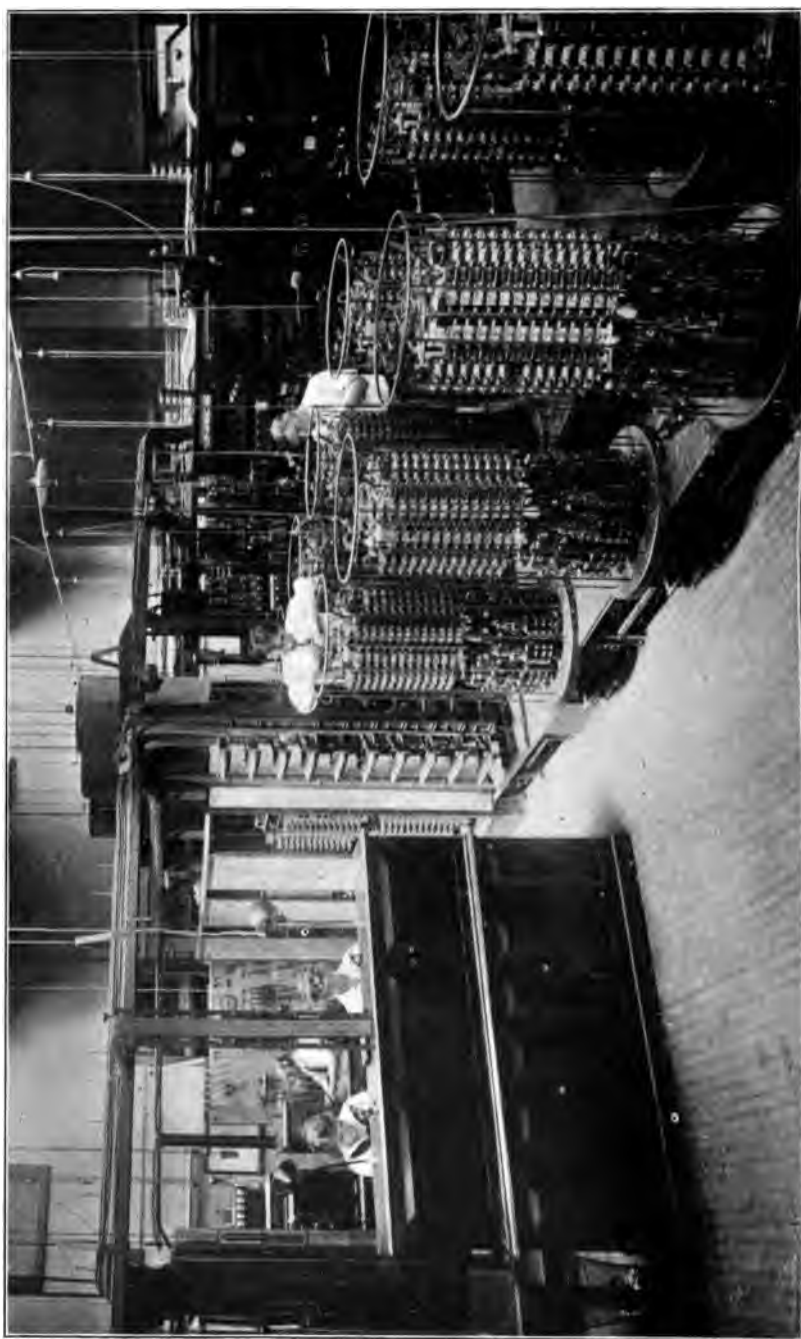
Every little while during the day, trouble men report to the trouble operator and receive directions for repair work. Part of this operator's duty is to work with these men when they are out on the line, because, in order to locate the trouble, they must call in to central from the cable box located at the subscriber's line, testing until they find the trouble. The operator answers on the line, using a bridge "cut off key" in doing so. When the line is repaired the trouble clerk reports the fact to the subscriber.

If the long distance department reports trouble, the wire chief is called by the trouble clerk. The wire chief also works with the linemen instead of the trouble clerk, if the high resistance trouble is found, since it is easier on a man to work with a noisy, "leaky" wire.

*Special knowledge required.*—The trouble clerk must have a very thorough knowledge of the system used in this company. She must understand how to make out all forms and reports and how to use the file. She must be able to read the dial. She must know how to use her switch board although this does not mean she has to be a regular telephone operator. She must know how to test the line for outside and inside trouble, and to understand why she is doing various things so that she may act not merely mechanically but with real intelligence. She must know how to work most efficiently with the trouble men who are fixing the line.

The head trouble clerk must also be able to teach what is involved in her work to her assistant, who must know practically everything the chief knows, except perhaps how to work with the trouble men.

*Special skill required.*—The normal skill required is very slight and involves only swift manipulation of the keys. Just as for telephone operating, a girl with deft hands has a great advantage over one with clumsy hands. Penmanship is also essential since all reports and tickets are made out by hand.



With the Automatic Telephone System the Connections Are Made Without an Operator, as Seen to the Right in the Picture //

11. ....

*How special knowledge and skill are obtained.*—Specific instruction is given by the chief trouble clerk to her assistant. The code expressions for trouble are printed in a little book which may be referred to, but most of which must be memorized. The chief operator from the toll department gives instructions in the technique of handling the public. The present chief trouble operator learned her duties in about ten weeks sufficiently well to handle the board. Expertness in reading the dial and making the tests requires months of work. An operator interested in the mechanical side of the work has indefinite possibilities of learning and developing efficiency.

A girl with intelligence finds no difficulty in learning her duties in the beginning. Beyond a few general facts she does not have to know the mechanics of the test of methods used by linemen in repairing trouble. She need only know what keys to open and how to take the readings.

*Promotion.*—A new girl is started in this department as assistant to the chief trouble clerk. She may be promoted to chief trouble clerk or assistant to the wire chief. She might possibly go from this position to the office. This position is not in advance of toll operators, but equal to them in opportunity and remuneration.

*Hours.*—The two clerks work on a shift. One of them works from seven-thirty a. m. to one p. m. and from five to eight p. m. The other works from seven-thirty a. m. to five-thirty p. m.

*Wages.*—The salary is the same as for telephone operating, ranging from eighteen to thirty-two dollars a month.

### SURVEY COMMITTEE RECOMMENDATIONS

The telephone service of Richmond gives employment to men in the construction and maintenance departments, and women in the operating department and the office. For the men in the maintenance department, where a high degree of special skills are required, the necessary courses of instruction are provided in Chicago by the Automatic Telephone Company. The men in this line of work in Richmond take advantage of this opportunity.

The women in the operating department are trained by the chief operator and a special instructor who spends part of her time in Richmond. As the Telephone Company makes adequate provision for training its workers, the Richmond schools have no obligation for vocational courses for these lines of work.

---



The company is willing to co-operate with the commercial department of the Senior High School in providing equipment and assisting in giving instruction in the use of the telephone to young people who will be employed in the Richmond offices and stores. As the proper use of the telephone is of primal importance in commercial work and training, the Survey Committee urges the schools to take advantage of this offer.

The Survey Committee recommends that the Richmond school through its physical training department, co-operate with the telephone company in providing the necessary opportunities for physical recreation for women operators.

## CHAPTER XX

### COMMERCIAL EMPLOYMENT: OFFICE SERVICE

Office work has been so thoroughly studied in the last few years in other parts of the country and its occupations are so universally similar in requisite technique, that further pictures of opportunity and duties are not so much needed, as scientific analysis of requirements and qualifications of workers. Both the Richmond, Virginia, and the Minneapolis Survey Reports contain detailed discussions of office work. The Cleveland Survey issues a book, "Boys and Girls in Commercial Work," which differentiates between training and opportunities for boys and girls. Two other books of real worth on the same subject are, "Commercial Work and Training for Girls,"—MacMillan Company; and "Women in Office Service,"—Boston Woman's Educational and Industrial Union, Boston, Massachusetts.

*Comparative number of men and women employed.*—Although interviews with employers have indicated that there is a certain demand in Richmond for male stenographers and bookkeepers and although the commercial teachers in the high school state that they have not been able to supply that demand, yet the fact remains that only twenty per cent. of the stenographers reported

Richmond are males, that bookkeepers are about evenly divided between the sexes, and that male cashiers predominate about the ratio of two to one. It is very significant to note that there are six men to one woman employed as clerks, tellers, etc.

Richmond the various office pursuits give employment to a total of about 600 males and 200 females.

The United States census shows that in Indiana in 1910, 15,570 workers were employed in "clerical pursuits," of whom 14,871 were males and 14,899 females, distributed as follows,

occupations: Stenography, 1,093 males and 6,639 females; clerks and shipping clerks, 11,723 males, 2,284 females; and bookkeepers, cashiers and accountants, 6,752 males, 5,345 females. Thus, 85 per cent. of the stenographic positions were held by men, and 83 per cent. of the ledger and cost-clerk positions by men. From these figures, it is seen that the Richmond distribution of men and women in office positions is about the same as might be expected from the census returns.

## Occupations and Number Employed in Various Types of Offices

	Stenographers		Bookkeepers		Cashiers		Stenographers and Bookkeepers		Cashiers and Bookkeepers		Clerks		Other Office Employees		Total	
	Males	Fe- males	Males	Fe- males	Males	Fe- males	Males	Fe- males	Males	Fe- males	Males	Fe- males	Males	Fe- males	Males	Fe- males
Mercantile Wholesale...	3	2	2	1	2	1	1	1			10				17	5
Mercantile Retail.....	2	8	17	6	6	11			2	6					27	31
Office Sales....	1			1	1		5	7					Agents 8		15	8
Shops and Fac- tories.....	8	49	21	18	5	3			4	1	66	18	(a)*	(b)*	162	91
Banks and Loan Com- panies.....		6	2	5	6					1	18	3	Messen- gers 4		30	15
Railroad and Express Com- panies.....	1				5						93	4	(c)*		116	4
Public Service (Hospitals, Schools, City and County Offices).....	11	10	3	5							6		Depu- ties 10 Officers 15	Investi- gators 3	45	25



It will be noted that the majority of office workers in Richmond are employed in factory offices. The Richmond retail stores employ but few office workers as compared with large city stores; sixty-four per cent. of the retail stores reporting no office employees. Small offices in large cities each employ one or two stenographers or general office workers, but in Richmond the majority of small offices employ none. Seven law offices report one office worker, and seven others none. Not one physician or architect has office assistants, indeed fifty-four of the offices reporting to the Survey have no employees.

*The scope.*—Special studies of office service were made in factories and retail stores only because thirty to fifty per cent. of all workers reporting were in these two fields, and because the work required within them was of wider scope than in the small office of the municipal office. Of the occupations shown in the table, there are included in this special study: The stenographer, the bookkeeper, the cashier, the cost clerk.

### The Stenographer

*The scope.* —The Survey census report shows twenty-six men and eighty-seven women stenographers. This occupation was especially analyzed in those establishments where type studies were made. Of the twenty retail stores, only four employ stenographers, of whom one is also a bookkeeper. One of the three factory offices specially studied and the telephone company office had no stenographer and the two factory offices each employed two.

*What the worker does: Regular duties.*—The stenographer, by means of abbreviations, letters and word symbols, records verbal statements, after which she transcribes them on the typewriter. To master the work involves the knowledge of an alphabet of characters used to express words phonetically. In addition to phonetic spelling, short cuts are made by the use of "word signs," which may represent whole phrases. Some systems of shorthand also vary the position of the symbol in relation to the line, and shade the pencil stroke, while others use neither position nor shading. Technique involves rapid writing of symbols and accurate transcription of notes.

In addition to writing letters, which usually requires the greater portion of the time of the stenographer, the work of nine

stenographers studied, two of whom are men, involves answering the telephone, receiving visitors, and assisting the bookkeeper and cashier.

*Special knowledge required.*—The special knowledge required involves thorough mastery of a system of shorthand, the ability to transcribe notes rapidly and accurately; the fundamentals of bookkeeping; and general office procedure, including receiving visitors, answering the telephone, weighing packages, and correctly stamping them, and correctly using filing devices and card catalog systems.

*What the worker does: Special duties.*—One of the stenographers in addition to the duties already described, is also a bookkeeper keeping summaries of receipts and expenditures, records of charge accounts with a tickler system, and all mailing lists. Another stenographer, employed in a retail store, keeps the cost book, makes out on the typewriter the monthly bills of all customers, takes charge of the c. o. d. money returned on delivered packages and keeps the daily ledger. Another attends to mail order business and helps typewrite customer's monthly bills. In two of the factories the stenographer was required to do billing and filing and in the other, to accurately copy and record all specifications and contracts.

*Special skill required.*—In stenography, skill consists of making clear outlines in taking notes, and of using the typewriter with accuracy and speed. The latter is analogous to the mechanics of playing the piano and requires the same dexterity of each finger acting separately and the proper position of the hand above the keyboard. The stenographer should also understand the mechanics of her tool, the typewriter, so that she may quickly change ribbons and make minor adjustments. Considering the wide range of the stenographer's work in Richmond, she should be able to operate adding and posting machines.

*General education required.*—The relation between general education and success in stenography is positive. The Richmond High School course is so organized that none can be considered a commercial graduate who is not also a high school graduate. The school considers this a selective occupation which only mature and well educated boys and girls should enter. There are many gradations in stenographic work from tabulating or typing envelopes to the intricate technique of stenography in banks and railroads.

Success in the former type of position does not demand high school training, but for promotion to more responsible work and for a high degree of success in such work, a high school education is essential. Both the volume on "Women in Office Service" and "Commercial Work and Training for Girls," prove by statistics and quoted wages the wage value of a high school education. Of the nine stenographers found in the type studies, five were high school graduates.

*How special knowledge and skill are obtained.*—Although stories are occasionally heard of people who picked up a knowledge of stenography and typewriting on the job, there is no occupation which more rigidly demands special training as a requisite to employment. The special training is obtained by study in some school. Aside from possible correspondence courses, there are in Richmond, only two business training schools: The Public High School Commercial Classes, and the Richmond Business College. The former has graduated an average of thirty pupils a year during the last three years. The latter claims that nearly one hundred pupils attend the school each year. There is no possibility of estimating how many stenographers trained in other cities are at work here in Richmond. Commercial courses in the high school are discussed in another chapter.

*Mental and physical requirements.*—That the qualifications, mental and physical, for success in stenography may be determined with some degree of exactness, is evinced by the interesting fragmentary experiments undertaken by such psychologists as Professor Pough of New York University and the late Professor Munsterburg of Harvard. The results of their efforts suggest that power of association and co-ordination are necessary for typing as well as the ability to form mental and manual habits easily. Such experiments indicate what science may do in the future by way of testing personal capacities for vocations. Definite physical characteristics necessary for the typist are flexible wrists and fingers, and a good strong constitution.

*Promotion.*—The most significant aspect of promotion is the differentiation between opportunities for boys and girls. In Richmond no comparative figures are available, but from the table, heading this chapter, it may be seen that 157 men as compared to eleven women are employed in positions of shipping, cost, bill and ledger clerks, which are positions of responsibility

and well paid. How many of these men began as stenographers is not known, but in Chapter XVII, "Mercantile Traffic," it is indicated that male stenographers become rate clerks, shipping clerks and traffic men. All the six male stenographers, whose work was studied in detail, have opportunity to advance to more responsible positions, such as cost clerk, traffic man and rate clerk. For the one woman, whose position was studied, no promotion was possible save increase in salary. It may be safely said that women usually continue to be stenographers and promotion consists of increased wages usually obtained by changing positions. For young men, the stenographic position may be a stepping stone, leading to continuous advancement, the exact character of which depends upon the type of establishment.

*Source and selection of workers.*—Stenographers are secured by advertising, calling upon one of the training centers, and by giving permanent employment to the extra worker who might have been employed during the rush season. The stenographer is interviewed, sometimes a letter is dictated as a test, and if the interview and test are satisfactory, the worker is engaged on probation.

*Seasonableness and overtime.*—The regular stenographic position is not seasonable. Overtime is sometimes expected of office workers during busy seasons. Most retail stores require the presence of their stenographers Saturday night, although their duties at that time may be more general than specific. Few factories or offices close regularly Saturday afternoon.

*Hazards and inherent character of work.*—There are no hazards. The work is sedentary and confining and at times involves nervous strain, the degree of which has not as yet been measured.

*Wages.*—The two men in this group of six stenographers received the initial wage of ten and twelve dollars a week, respectively. The other four stenographers receive nine and ten dollars, not as an initial wage but after a period of several years. The beginning wage for boys and girls is from six to seven and one-half dollars.

### The Bookkeeper

According to the census returns of the Survey, there were on March 1, 1916, forty-seven male and thirty-seven female bookkeepers in Richmond, in addition to seven males and thirteen females



who were cashiers and bookkeepers. This study is based upon a careful analysis of ten bookkeepers, seven of whom were employed in six store offices and three in three factories. These ten bookkeepers, unlike the stenographers, have no general office duties aside from answering the telephone.

*What the worker does.*—The bookkeeper keeps a systematic record of business transactions in order to show their relation to each other, and the state of the business in which they occur. In its simple aspects, bookkeeping involves the use of the day book, the cash book and ledger. In its more highly developed aspects, it involves the use of specialized types of all sorts of record books and forms. Naturally, the work varies with the size and system of the company. Even within the limited scope of this study it was found to range from a simple journal of entries to a highly organized system of accounts for every department of a complicated business. The simpler methods are largely used by the proprietors themselves in the retail stores, where no office worker is employed. The more complex systems are used in large factories and in large stores.

A typical schedule of the bookkeeper's work in a retail store, involves keeping the store ledger, journal, day book for charge sales, general cash book, ledger and ledger auxiliaries, and synco-pated journal. The synco-pated journal groups numerical facts which would otherwise have to be recorded in several different journals and involves nine groups: Merchandise, cash, expense, interest and discount, freight and express, stock accounts, and bills payable and receivable. In addition, the bookkeeper makes out statements to customers each month, and directs the collection of unpaid bills; makes monthly summaries of receipts by departments, pays firm bills (manager signs all checks), takes charge of letters and filing, considers questions of credit, if the manager and assistant are absent; receives payments of bills at cash window and makes change; receives and adjusts complaints about charges, banks cash and checks, and keeps the bank books.

A schedule of bookkeeping work in a factory includes keeping ledger, synoptic ledger and cash book; entering all shipments; and summarizing statements from pay roll. The work requires the adding machine in obtaining totals. The detailed work of factory accounting is described in the discussion of the cost clerk.

*Special knowledge required.*—Aside from a thorough working knowledge of all types of bookkeeping, the bookkeeper must know

the commodities of the company which are sold or manufactured, as well as the business details of office procedure in municipal and institutional office. A knowledge of transportation and how to obtain accurate information about mercantile rates should be a part of the equipment of every bookkeeper who pays bills on freight and express. How to bank, how to compute interest and discount, and all the multitudinous details of office technique must be known by the bookkeeper.

*Special skill required.*—Success in bookkeeping and accounting depends upon mental rather than manual skill, but the mental equipment is worthless without skill in penmanship and in operating an adding machine.

*General education required.*—What has been written concerning the general education needed by the stenographer, applies to the bookkeeper with the reservation that the stenographer, in order to advance to highly paid positions, must have an accurate knowledge of English and general information. The bookkeeper is more of a specialist, having less general contact with the public than the stenographer, and if highly expert in accounting, can fill a position whether a high school graduate or not. On the other hand, difficult problems in bookkeeping require a trained mind which higher education develops. Such advanced positions as treasurer, purchasing agent, or secretary could not be filled by an average person without more than eighth grade education.

*How special knowledge and skill are obtained.*—Penmanship and knowledge of bookkeeping are both prerequisites of employment in this position, although a worker engaged as cashier or stenographer may if unusually apt, become a bookkeeper's assistant. The same schools which teach stenography and which have been discussed under that head, also teach bookkeeping. Knowledge of the general principles of the subject, with application to various specific problems, occupies about six months in the private business school and a school year at the high school. Higher accounting is also taught in both schools. The work of the bookkeeper, for entrance, proficiency and promotion, requires a special vocational education.

*Mental and physical requirements.*—Practically no attempt has been made to discover the qualifications for success in this work. Ability to analyze a problem and invent solutions for new problems are certainly essential for success. The steadiness

and reliability of character needed by this worker, who handles large sums of money often with very little supervision, cannot be overestimated. They are distinguishing features of this position.

*Promotion.*—The position of bookkeeper is sometimes filled by promoting the assistant bookkeeper or cashier. "Once a bookkeeper, always a bookkeeper," is a slogan whose truth is attested by the fact that all the ten bookkeepers found in these type studies have held their positions for many years and do not expect to change them. The position of treasurer or secretary of the company is sometimes filled by promoting the bookkeeper and there is more possibility of such advancement for men than women.

*Source and selection of workers.*—The responsible post of bookkeeper is seldom filled in any establishment by taking a new worker from a school. The subordinate positions of ledger clerk or assistant bookkeepers may be filled by inexperienced graduates of business courses but advanced positions or general bookkeeper require experience as well as special training.

*Seasonableness and overtime.*—There is no seasonableness in this position, for even if a factory closed down for a period, the office may be very busy taking invoice or balancing the year's books.

*Hazards and inherent character of work.*—This work is confining and sedentary. The responsibility it entails sometimes becomes a serious mental strain.

### The Cashier

According to the Survey census returns, there were twenty-seven male and fifteen female cashiers in Richmond in March, 1916. Type studies were made of seven cashiers, two of whom had bookkeeping duties also.

*Type of work.*—The term "cashier" applies to two entirely different kinds of work: Taking in money direct on sales, making change and keeping a simple record of the transactions; and the issuing of money for the pay-roll, and paying company bills. The cashier in the retail store often has some general duties to perform, such as helping the bookkeeper in the dry goods store and making sales in the grocery store. The cashier of the large es-

establishment may be responsible for seeing that the books are correctly kept.

*What the worker does.*—As the work of each of the seven cashiers is distinctive in some respect, the detailed schedule of the day's work of each will be reported.

1. The worker collects the money from the cash register, totals it and checks it against the amount of sales which are cashed up on the register during the day. She does the banking, makes out invoices and keeps a record of incoming merchandise.

2. The cashier checks sales slips, foots extensions and totals, and makes change, which is sent back by the carrier to the sales girl. Every morning she receives money from the bookkeeper, for which she accounts. Every evening she totals the cash and checks it with cash sales slips and the original sum received. She also keeps cash book.

3. The cashier sits at a desk on the first floor and makes change for the salesmen, ringing up the cash in the register according to the number of each salesman. By this means she keeps a record of individual sales. She receives the charge sales slips from the clerks on the floor, which she enters to the customer's account, adding the total of the sale on the face of the envelope, within which is placed the sales slip. At the end of each week or month, according to the custom of the customer's payments, on charge accounts she obtains totals by the adding machine and encloses the printed slip from the adding machine, with the bill and the sale slip. She typewrites invoices for individual customer's bills; fills out the regular form for cash sales at the end of the day, which in turn, are collected for statement at the end of the week; answers telephones and if not engaged, and all salespersons are busy, she waits on customers. She also does the banking.

4. The cashier is the head of the tube system, making change for all sales. This tube system is also used for shooting messages to any part of the building or the warehouse. All the messages go to the cashier, who re-routes them when necessary. She keeps the index file of individual customers and records bill payments; and keeps the cash book and records amounts of sales by departments. For "fill in work" at odd moments, she does typing.

5 and 6. They inspect sales slips and make change in the cash balcony; record charge sales, entering them in cash book accord-

ing to departments; file sales slips by the clerk's number, total each clerk's cash and charge sales, and enter them in record books by clerks and departments. The assistant cashier does odd jobs in the office and assists in writing letters.

7. The head bookkeeper or cashier has full charge of general ledgers and all cash. He banks, pays bills of the house, and makes out all checks. He also makes out order cards for machines and sends "manifest" to the repairman.

*General education required.*—Some high school training is required for cashiers. Of these studied the majority of workers had more than eighth grade education. Knowledge of arithmetic and banking is needed, and in the higher positions which bring the worker in contact with the public, advanced general education is essential.

*How special knowledge and skill are obtained.*—Employers interviewed for this study stated that most cashiers of the less expert type can get what special knowledge they need on the job, provided they have a thorough knowledge of commercial arithmetic and bookkeeping. The necessary training in these two fields must be obtained in school.

*Mental and physical requirements.*—Accuracy and rapidity in counting and computing change is necessary for success as a cashier. The qualifications of the expert cashier are practically the same as for the bookkeeper.

*Promotion.*—The cashier may become bookkeeper, since part of the required duties are to prepare statements for the bookkeeper.

*Source and selection of workers.*—Workers are taken from the outside or from the sales force. In the latter case they are chosen because of their alertness and knowledge of the business.

*Seasonableness and overtime.*—The cashier in the retail store has the same hours as the salesperson. In order to get the day's balance, some overtime is occasionally required. Their work is not seasonable.

*Hazards and inherent character of work.*—The work is confining and responsible in character, involving all the mental and physical strains of a confining, sedentary life.

*Wages.*—Of three schedules received for retail cashiers, two quoted wages at six and one thirty dollars per week.

### The Clerk

The term "clerk" has been used to designate a group of workers which could not be classified elsewhere. The range, includes clerical workers, bill clerks, stock, shipping, and receiving clerks, file clerks, timekeepers, and cost and statistical clerks. Clerical work, except in the railroad office, usually is the most subordinate form of office work. Statistical and cost clerks, at the other end of the scale, are the most expert positions requiring specialists who are well remunerated.

*Number employed.*—In Richmond there were 217 males and 36 females designated as clerks working in various offices. It will be noted in the opening of this chapter, that the majority of clerks were employed in railroad and express offices, and the offices of shops and factories.

*Definitions of various types of clerks.*—The clerical worker keeps records, opens and distributes mail, writes tags and slips, and does checking and posting. In the railroad office, however, the term is more loosely used and includes such experts as the rate clerk and the chief clerk, whose work is not only highly specialized, but executive.

The bill clerk prepares invoices, usually on a typewriter or billing machine. There are very few bill clerks in Richmond, except in railroad offices. This work sometimes involves rechecking figures.

Stock clerks keep records of all materials in the stock room and records of all materials issued. Stock is usually issued in accordance with signed requisitions which are checked against the department.

The shipping clerk works in the office and warehouse, checking and supervising outgoing material. The receiving clerk is in charge of incoming material, checking it against the invoice for quality, quantity and condition. Both these positions are discussed in Chapter XVII, "Mercantile Traffic."

The file clerk is employed to correctly file away all correspondence, orders, contracts and papers of the firm. The order is generally alphabetical, with folders for correspondence and cards for reference tabulation. It is the file clerk's duty to keep the orders correctly filed and find such material as is needed for reference by the other clerks.

The timekeeper summarizes the time for all departments,

computing the wage for each worker. In one factory the cost clerk is also timekeeper. Frequently the foreman of the department keeps the time of the employees under him. If the work is on a piece basis, the time put in by the men is important only as a record of efficiency. One employer stated that the wage received by this clerk was about seventy-five dollars a month.

Statistical and cost clerks are experts engaged in analyzing the production costs of all departments in order to determine the parts of the business which are most and least profitable, the proportionate cost of labor, raw materials and overhead expense. It is on the basis of these computations that prices are fixed, that charges on output are made, that wages are cut or raised, and that sales are directed.

### The Cost Clerk

The work of two cost clerks is presented here in detail to show the high degree of expertness required by employees of large establishments and the opportunities which the field offers for men capable of advancement. This work is analogous in interest, importance and specialization to that of the shipping clerk and traffic man. There is a close connection between cost work and bookkeeping, but as the former is less generally known to the public, it is analyzed in more detail in this report.

*What the worker does: Foundry cost clerk.*—The cost clerk enters on a foundry production sheet the time and piece work done by men the day before. Foundry men each have a book for recording their own production. They fill out two stubs in duplicate, keeping one and turning over the other to the foundry cost accountant. Laborers fill out a yellow ticket to report the number of hours worked, and hand it to the cost accountant in the same fashion. These tickets for moulders show mould, casting and pattern number; whether good or bad; date; pay roll number and name. The factory production sheet shows for each worker the castings made, the pattern numbers, the number good and bad, the factory loss, and cost price per hundred per pattern.

The production sheet is made out in duplicate, one copy being sent to the cleaning room foreman. The foreman is responsible for rating the quality of the castings after they are "rattled." He sorts them according to pattern number and marks on the production sheet which are good and which are bad. He calculates the factory loss from core blows or castings broken in rattling.

He also marks on the production sheet the weights of castings per 100. When the duplicate is returned by the foreman to the foundry cost accountant, the latter has information for other calculations. The time sheet is hung in the factory for the inspection of the men.

The moulders time book is made out from the production sheet. This book contains a weekly summary of facts. Company loss is figured per individual. The foundry report is figured from the weekly pay roll sheets. It presents a summary of all facts. It shows exactly what each contract costs in materials and labor, and exactly what each operation for the factory departments costs in labor and materials. The number employed, amounts paid, and cost per ton, appear on this report. One of these weekly reports goes to the bookkeeper and is finally filed with him, after he has filled in the figures which show the amount received for each contract. The duplicate is filed in the office of the foundry cost accountant.

The pay roll sheet is made from the time book. It is a long sheet with a detailed report, showing labor charged to all contract customers, to all miscellaneous customers, and to the various departments of the company itself. It also shows cost of materials to various departments. The price per hundred is entered and the total wages of the men figured and entered. Pay envelopes are then written from the pay roll, checked against it, and sent to the office for filing.

The cost clerk makes out the record card of all orders. He writes work memorandum for the foreman on the factory foreman's pad. When the work is reported at the end of the day, the cost accountant writes the number of perfect castings produced on the record card according to pattern. When the production is equal to the order, a balance is struck.

*What the worker does: General accountant.*—The general accountant has charge of all books and accounts. He uses three synoptic ledgers.

He makes out the "manifest" of contract orders for the factory, also the time sheet records, and pay roll. He is the cost estimator, deriving production, overhead and raw costs from estimates of cost of material and wage scales.

*Special skill required.*—Because the content of this occupation is entirely mental, there is no requisite skill except penmanship.



*Special knowledge required.*—The cost clerk must be a trained bookkeeper in order to understand the underlying principles of accounting, business procedure, banking, interest and discount, indexing and business papers. He should also understand the basic problems of traffic, transportation, insurance and taxes. The cost clerk must be thoroughly familiar with the process in his own factory; the product; the prices of product; system used in the recording of output and labor; the inter-relationship between departments; and methods of receiving and paying claims.

*How special knowledge and skill are obtained.*—A thorough course in bookkeeping is a requisite for the cost clerk. Both the workers who were interviewed for this study had had such training. Neither of them had pursued a special course in cost accounting. The systems they used were of their own devising. Both acquired the necessary information about the factory by working there in other capacities before becoming cost clerks.

*Mental and physical requirements.*—One of the prime essentials for such work is power of analysis without which the cost clerk would be unable to solve his problem. He must really be creative in order to originate or modify systems of recording and computing financial facts peculiar to his position.

*Promotion.*—One of these men began as a factory worker and by gradual advances was chosen for the position of cost clerk, the other began as stock keeper, advanced to clerical office work and assistant bookkeeper, after which he became cost clerk.

*Seasonableness and overtime.*—This occupation is not seasonal. It requires some overtime when the accounts must be balanced, but it is not regular, and, since this work is of a professional character, necessary overtime is expected without pay.

### Training for Office Service

*General view.*—Information about the wide scope of office work, its variety, the advanced opportunities to which it leads, the variation of requirements and comparative advantages of employment in one type of office over another, ought to be secured by every youth who contemplates entering any of the commercial occupations. This information is available and should be part of the equipment of every prospective office worker.

*Few "specialists" positions.*—Richmond, because of its numerous small speciality stores and factories, has no very large group of office workers whose daily tasks are highly specialized. It has, for example, no group of typists and adding machine operators; few combinations of various occupations in office work; few women in executive positions; and only a few types of offices which employ any office workers.

*Field not overcrowded.*—There are evidences that the field of office service is not overcrowded in Richmond. Both private and public schools state that they have rather more difficulty in filling calls from employers than in finding places for graduates. As there are no employment centres for commercial workers, it is impossible to know how many office workers in Richmond are unemployed.

*Principles underlying training for boys and girls.*—Boys and girls in the Richmond commercial classes are at present receiving identical training, although their future work is to be very different in character. Boys in the employ of the railroad may start as stenographers, but they are promoted to the special and executive positions of rate clerk and assistant to the chief clerk; in the real estate or insurance office they may start as collector, or clerical workers, but they are advanced to the position of agent or office head; in factories they may begin as stenographers or bill clerks, but they may be promoted to assistant department heads, or to special work in various factory departments. Girls, on the other hand, are not so advanced. An employer expects a girl employed as a stenographer, to remain one, or if he employs her as a cashier, she is expected to remain a cashier. A girl and boy may both enter a bank as stenographers, but the boy is promoted to ledger work or to assisting the cashier, while the girl remains a stenographer. There are, of course, exceptions and more women are now found in special and administrative positions than formerly. The Cleveland Survey Report on "Boys and Girls in Commercial Work," has already been quoted, showing the differentiation in work for boys and girls.

*Stenography and bookkeeping for boys and girls.*—Technical training in stenography and typing, in filing, in operating office machines and general office procedure, ought to be given girls because they are going to be employed to do these specific things and because the majority of them will continue to perform the duties in stenography and typewriting work to make them efficient in

their initial work. Training in bookkeeping has two distinct aspects: The basic principles of accounting and rudimentary technique of keeping books, which is generally valuable to every young man and woman entering a business profession; and the science of expert accounting, which is a highly specialized vocation and useful only to the boy or girl who expects to become an accountant. The question which every business school has to decide is where to differentiate between the two and how much time is required in the study of each. Certainly girls intending to become stenographers ought not to be required to take as many hours of bookkeeping as boys. Certainly boys and girls not wishing to become bookkeepers, should not be expected to spend half as much time on this study as those who wish to specialize in bookkeeping, looking toward accountancy. Practical ledger work is necessary for the application of principles in bookkeeping, but it is a question of how much detail is valuable to the young person before he or she has had the advantage of experience.

*General courses in mercantile traffic.*—In Chapter XVII, the course in "Mercantile Traffic," which is thought to be valuable for every boy and girl who enters commercial life, is outlined in detail. This course should be required of boys and elective for girls.

*Vocational information.*—There should be included in the commercial department, a presentation of the scope and possibilities of office work. To the office worker is applicable also what was suggested in Chapter XVIII, "Mercantile Sales," on salesmanship, concerning the teaching of practical economics, knowledge of the world's markets, basic reasons for difference in market prices, the basis of factory prices and advertising methods.

*Practical experience.*—The value of practical experience<sup>1</sup> commercial students is so generally accepted as to be no longer worth debating. The Richmond High School is to be congratulated on its work in this direction. To be of greatest value, plan should be formulated for obtaining a full report of the proficiencies and deficiencies of work done on a part-time basis. A complete and clear report card which the supervisor of the student work might fill out and return to the school, would be of inestimable benefit in pointing out to the commercial teacher just where are the pupil's deficiencies and where greater emphasis should be laid on the course of study.

*Follow-up provisions.*—Especially during this experimental stage it would seem wise to recommend that the high school commercial teachers organize a scheme to definitely follow-up their graduates. Definite occupational histories of graduates which could be added to their educational records, would form a most reliable body of vocational information which would be of great value to oncoming workers. By determining into what occupations young people are going, how they are rewarded and promoted, the public school which aims to train for wage earning, may both test its own efforts and provide its own means of adjustment to meet the needs of the local situation.

*Contact with the job.*—No vocational course can afford to be without constant contact with the job. Some means of co-operation must be worked out to bind the effort of the school close to the actual work for which its product is to be used. An advisory committee of business men should be formed to meet with the business teachers often enough to keep them in touch with changes in business practice and new problems and opportunities.

### SURVEY COMMITTEE RECOMMENDATIONS

The Survey Committee, in light of the findings regarding Office Service, Mercantile Traffic and Sales, recommends to the Richmond Board of Education that the commercial department of the Senior High School be organized so that preparation for commercial work for boys and girls be differentiated in keeping with the varied requirements of the commercial world for men and women.

Some of the obviously needed units in the commercial courses for girls are: Stenography, typewriting, spelling, office procedure and practice, and the rudiments of bookkeeping. The present course requiring three semesters of bookkeeping for girls is thought to be too long; one semester is sufficient. In the course in typewriting, provision should be made for pupils to learn how to make minor repairs and adjustments to the typewriter and to change ribbons. The unit here called "Office Procedure and Practice," should include the use of the telephone, adding machines, card catalogs, filing systems and the folding of letters. For the girls, most of the time should be given to developing techniques; but ambitious girls of capacity should be permitted to take the other courses outlined for the boys.

For the boys the following commercial courses should be provided: Enough stenography and typewriting to master the technique; bookkeeping, mercantile traffic and transportation, mercantile sales, industrial history, rudimentary economics and vocational information regarding commercial fields, together with such other subjects as are needed for wage earning and entrance to a college of commerce.

Some elastic provision for commercial training should be made for young people who cannot complete the whole course and who drop out to enter commercial work.

The present practice of part-time employment during the senior year is commended, and the suggestion is made that teachers follow up this work, knowing the exact work done, and the proficiencies and deficiencies of part-time workers in office technique and practice, stenography, typewriting and spelling.

All commercial work in the Senior High School should be on a strict vocational basis. A ready means of contact should be established between the school and business. This can be best done by an advisory committee composed of store proprietors, office workers and teachers. The function of such a committee would be to help organize courses, follow up work of students and be generally helpful to the commercial department.

The evening school is commended for offering courses in advanced bookkeeping and accounting, stenography, typewriting and office practice. This work should be continued and enlarged to meet growing demands.

## CHAPTER XXI

---

### HOUSEHOLD EMPLOYMENT: THE HOUSEWIFE

*Scope of study.*—There are over 6,500 housewives in Richmond, constituting more than 27 per cent. of the total population, and 5,000 more than those employed in any other single occupational group. To discover the actual work done by the housewife and the knowledge and skill required for it, representatives of the Survey held conference of from one to two hours in length with sixty-seven housewives of Richmond. The homes were chosen so as to afford a typical composite picture of the whole community. The spot map of the homes visited shows they were located in every section of the city and that no section of any considerable size was omitted. Several foreign homes were visited. Classified according to occupation of wage earners, schedules were obtained from fifteen homes of the W type, professional men; seventeen homes of the X type, merchants, and store and factory managers; nineteen homes of the Y type, tradesmen and salesmen; and sixteen homes of the Z type, unskilled laborers. Forty-five of the families visited had children under eighteen years of age. The size of the families varied from one to fourteen members. Houses varied in size from two rooms, occupied by six people, to ten rooms, occupied by two people.

#### Constant Factors in the Work of All Housewives

##### General Knowledge Required

Reading and writing are essential to the housewife, and in order to keep accounts, read recipes, advertisements and household magazines, she needs at least an elementary school education. Ten housekeepers visited had taken college work and more than half had taken some high school work.

##### Seasonableness of Work

Most of the household work is continuous throughout the year. There are, however, certain seasons and occurrences when extra work is demanded. Housecleaning begins in the spring as soon as the days are pleasant enough to permit taking things out doors. Most housewives combine with the regular cleaning

the painting, papering, varnishing or remodeling which is to be done. The fall cleaning involves about the same kind of work as the spring, but, as a rule is not so extensive. Spring and fall are also the popular moving seasons, which always means much extra disagreeable work for the housewife but which may simplify housecleaning. Canning begins in the spring as soon as fresh fruit is ripe and extends well into the fall. No extra work is attempted in the winter but the care of the furnace and the increase of smoke and mud add to the regular work. The amount of sewing varies as it does in the dressmaking trade, but mending is always required.

In addition to the regular seasonal work there are some extra demands which are likely to occur at any time. Sickness of a member of the family necessitates more work as well as added mental strain. Guests in the house make extra work. Absence of members of the family may make the work lighter while they are away and may add extra work necessary in getting them ready to go.

#### What the Housewife Does

*Selecting the house.*—A few Richmond housewives have inherited the old family homes; a few have married men who have homes in readiness, but the initial problem confronting the great majority is that of selecting a building site or a home for rental or purchase. The choice is conditioned by the amount of money which may be so spent, the size of house necessary to accommodate the family, and the makeup of the family both in regard to the occupations of the wage-earners and the school requirements of the children. The general location is selected on the basis of health and cleanliness, congestion, available sewer connections and social and moral atmosphere, or, possibly, nearness to husband's business or work. Most people prefer to live near their friends or people with kindred interests.

The housewife obtains addresses of the houses available in the general location desired from friends, real estate agents and newspaper advertisements. She looks at each house and criticizes it on the basis of arrangement of floor space, lighting, construction, sanitation, repair and nearness to school, church and work. If the house is being built she may help in planning it, or if the house is an old one she may help to plan repairs and alterations. The selection of the furnace involves investigation of the relative merits of different heating systems through friends and sales-

men, and the general disorder and dirt incident to its installation.

*Furnishing the house.*—Furnishing the house involves the selection and arrangement of the necessary beds, chairs, tables, etc. Most housewives try to make the house cheery and restful by selecting furnishings and draperies which are beautiful as well as useful. They may buy all furnishings at once, or what is more likely, a few pieces at a time and try to make them fit into the general plan in mind for the completed home. The housewife may decide on some color scheme either for the first and second floor, or for the whole house at once or for each room separately. Housewives in rented houses who move frequently find that their furniture does not always look well in the new place. The wall paper may not be of her own choosing, and thus incompatible with the effect she has attempted. Twenty-seven of the housewives interviewed were renting their homes, four were buying on payments and thirty-six were owners. The change in styles of furniture often make it hard to buy new pieces which will look well with the old. Some years ago it was practically impossible, with limited means, to purchase plain wall paper or furniture designed on simple lines and free from meaningless ornament. One housewife recently sent all over the United States to get a wallpaper which would carry out her scheme of furnishing.

One housewife had a few good rugs in the beginning. She has built up her whole scheme of house furnishing to harmonize with the texture and color scheme of these rugs. Another has selected all her furniture to harmonize with a few old chairs and tables which she inherited. Some housewives make a special effort in one or another special phase of house furnishing; china and silverware, curtains, rugs or chairs. The conditions imposed by the amount of the income are considerable but more fundamental are the problems of making some consistent plan of the whole, of selecting and adhering to an agreeable color scheme, of adapting the new to the old, and selecting for utility and durability as well as for beauty. Bad examples are easier to find than good ones, for many of the housewives visited had no plan at all.

*Keeping the house sanitary.*—If the house has been well chosen the problem of sanitation is more than half solved. In fact, aside from the choice of location, there is little that the housewife does but call a plumber when a pipe leaks or when the drains are clogged. If the plumbing is not modern, she has the added



burden of pumping water from a well or cistern and disposing of it by throwing it out in the yard or cesspool. Most housewives dispose of garbage by placing it in covered cans in the alley for the collector. Those who keep poultry, nine of whom were interviewed, use the garbage for poultry feed. Some burn it in stoves, furnaces or garbage incinerators, while some employ the primitive method of distributing it around the yard.

The housewife must be constantly on the lookout for household pests. Rats and mice may be caught in traps and disposed of easily. To guard against moths she must air out closets frequently and pack away clothing with various preventatives such as moth balls, tobacco leaves, gasoline or black pepper. Cockroaches and water bugs are not uncommon and there are few housewives who have not at one time or another had the task of exterminating bedbugs.

It is safe to say that the problem of ventilation has not been attacked scientifically. Most housewives air out the house during the daytime by opening doors and windows. Windows are so loosely fitted in some houses that the housewife considers other ventilation superfluous. As a rule, windows are opened at night. Some furnaces provide for intake of fresh air and moisture. Three of the housewives said that the only provision for moisture in the air was the teakettle on the kitchen stove.

Many housewives attend to the furnace, make and feed fires and take out ashes. Twenty-six of the households visited were heated by stoves. When stove heat is used, fires usually need more frequent attention and make more work in cleaning up dust and dirt. Since gas has become available, most Richmond housewives use it for cooking.

Kerosene lamps were used for lighting by seven of the housewives visited. This adds the task of cleaning and filling them. The greater majority use electricity. Very few are able to read the meters for gas, water or electric light service.

*Keeping the house clean*—A great deal of the work of the housewife consists in the routine work of keeping things clean; dish washing, sweeping, dusting, mopping, scrubbing and putting things to rights. The woman who employs a maid turns over this work to her. Some employ women by the day to do most of it. The amount to be done depends upon individual standards of cleanliness, size and makeup of family, number of rooms, amount of dust and mud from the street, and smoke from factories and railroads.

Less than half of the housewives visited did their own laundry work. On the other hand five did washing and cleaning for other people. The process differs in detail according to individual theories. Some put their clothes to soak the night before; some put them in the tub and rub them immediately; and some use a washing machine for both washing and rinsing. Clothes must be hung up to dry either in the yard, basement or attic. The ironing takes fully as much time as the washing and requires more skill and patience. The housewife has, besides the straight laundry work, the task of removing spots and stains.

Most housewives use labor saving devices of one kind or another. Thirty mentioned electric irons, twenty-seven washing machines, and fifteen vacuum cleaners. Sewing machines and carpet sweepers were found in practically all of the homes. Other devices include fireless cookers, bread mixers, motor sewing machines, dustless dusters and oil mops.

Although house cleaning is done more systematically and slowly than it used to be, very few housewives have done away with it entirely. This work does not vary a great deal from regular cleaning. Clothing is sorted, aired and packed away. The woodwork is cleaned, windows are washed and rugs are thoroughly beaten. All the usual cleaning work is done with greater thoroughness and inclusiveness and extra tasks such as cleaning closets are done one at a time. Housewives frequently take this season for papering, decorating, varnishing, renovating and remodeling. This work may be extended over several weeks.

*Selecting and preparing food.*—Only three or four of the housewives visited plan meals scientifically with reference to food value and proper balance of diet, and the special needs of her family. The great majority plan the meals for a day ahead, but without reference to any scientific standard. A few approximate a balance diet by following general principles of serving as much fruit and green vegetables as possible and limiting the meat in the diet. A few follow a special diet for certain members of the family. Some housewives do not try to plan until just before meal time and then "buy what is the cheapest," or let the children select what they want.

Practically all the housewives visited buy some prepared food, breakfast foods, bread and canned fruit. Fifteen of them buy everything possible in large quantities. Thirty-five housewives buy almost everything at one store, and twenty-four of

these use the local store and eleven buy in different places. Two or three order some staples from large mail order firms. Several purchase in quantity butter and eggs, potatoes and other hardy vegetables from the farm. Nine of the housewives visited keep poultry; thirty-five have gardens. The work involved in keeping the garden is discussed in Chapter XXV, "Home and School Gardening."

Sixteen of the housewives visited select almost everything personally; twenty do practically all ordering by phone; six give their orders to the grocery boy who comes every morning to solicit from them, and four or five order staples by phone and select everything else personally. In fifteen instances the husband or children do most of the buying. Most of the housewives who do not select personally know the grocer with whom they deal and are careful to send back anything not strictly according to order.

Preparing the food cannot be described in detail because the process varies for each diet served. Most housewives in Richmond do not serve in formal courses but a few always serve in courses. The poorer group serve only two or three dishes on the oilcloth covered table in the kitchen.

Canning is extra and comes definitely outside of the regular daily routine. It involves many processes, such as preparing the fruit, which is always more or less tedious; boiling it and putting it in cans, which have been specially heated and prepared, and sealing the cans. Details vary according to the kind of fruit or vegetable. Jellies, pickles, marmalades and preserves are made by processes which vary according to the product and kind of fruit or vegetable used.

*Clothing the family.*—It was found that the amount of sewing varies more among Richmond housewives than any other part of household work because it depends so largely on income, on special talent and training, on individual thrift, standards of living and pressure of other duties. The problem involves the decision as to what each member of the family will need for the season, what can be worn again and what can be remodeled. The housewife plans on the basis of style, color and need for warmth. Some articles including men's clothing, tailored suits, knit underwear, shoes and hosiery are bought ready made by almost every member of the family. Nearly half of the housewives visited make all other garments. A very few of the others

half do not sew at all; the remainder do their own plain sewing and buy the rest ready made or have it done by a seamstress or dressmaker.

In remodeling garments there is the additional work of ripping up the old and fitting the pattern to the cloth already cut up and possibly disfigured with holes or stains. On the basis of our study it is estimated that nearly half of the housewives of Richmond do a great deal of remodeling, and, at least twenty per cent. do some. In many of the poorer homes most of the sewing consists of remodeling old clothes given them. Children in the family usually make necessary more remodeling. The statement of one housewife may be taken as typical. "I do a great deal of mending. I do some remodeling of my own clothes and a great deal for the children."

Mending consists of darning holes in stockings or rents in dresses, sewing on buttons, hooks and eyes, and patching. The skill required varies according to the fabric and the value of the garment. Two housewives said mending took half a day a week. One said, "the amount of mending is terrific." More than half said they did a great deal of mending. Twelve said they did "some." One schedule reads, "mends and remodels some; goes ragged." Another stated, "mending was sadly neglected, younger children wore older children's clothing without remodeling." The richest and the poorest classes do the least mending or sewing.

The amount of hat trimming done varies even more than the dressmaking and for much the same reasons. Millinery for the housewife involves in type, the same work as that of the milliner.

The most popular "fancy work" of to-day is crocheting and tatting. It is not to be taken seriously as a part of the housewives' inevitable tasks because it is so largely done as "pick up work," and as a minor entertainment at teas and club meetings. It provides excellent and artistic trimmings at a minimum of expense.

*Caring for children*—Children make not only more work but work of a highly specialized nature. Sewing for children is a whole field in itself, not only because of differences in style and pattern, but in the selection of the textiles best fitted for children. The amount of mending and remodeling increases greatly in ratio according to the number of children in the family.

Of the forty-five families visited in which there were children

under eighteen, fourteen of these had only two children; eleven had four children and nine had five or more. One family had five children under six years of age and one had seven children under thirteen years. Five of the housewives visited had babies less than a year old. In three of these families there were four or more other children.

The baby makes a great deal more work. If it is breast fed the problem of feeding is simple but demands that the mother plan her own diet very carefully. When the baby is fed with the bottle the mother must select a food that agrees with it, the preparation of which involves unusual care in keeping utensils sterilized and food in a sanitary condition. The mother usually follows the directions of the doctor, both in regard to the selection and preparation of the food. As the child grows, food and clothing should be adapted to its development. Feeding and clothing, however, do not include half of the task of caring for the baby. The mother can never plan to do anything else without the possibility of interruption, nor can she leave the baby alone. There are countless little things to be done all the time; picking up toys, changing clothes, drying tears and wiping noses.

The mother also has the duty of training the children to do household duties. Many mothers train both boys and girls to help with the work of the home. Some begin by giving them certain tasks around the house, such as keeping a particular closet clean, putting away their own clothes or doing errands. Many take advantage of the natural instincts for play and imitation and let the child imitate what is being done in washing dishes, cooking and sewing. Many mothers teach sewing by taking pains to show the little girl how to dress her doll. While the child is in school the mother usually visits the school more or less frequently and helps in school work. The help given depends largely on the education of the mother and the help needed by the individual child. The mother is responsible for the hours spent out of school. Recreation should be supervised. Some mothers spend much time and thought on entertainments which will provide legitimate amusement and cultivate good companionship for their children. A few also teach their children something besides household work such as music, drawing, or language. Many mothers also advise in the selection of a vocation.

*Keeping household accounts.*—In some families the whole income is turned over to the housewife and she manages it every-

to buying her husband's clothes and giving him money for lunches and car fare; with others, the housewife has no definite idea of the income at all. One housewife says she "keeps no accounts and has no allowance, spends whatever she feels necessary for comfortable living," another, "always gets money when she asks for it and no questions asked how she spends it." In the majority of families, husband and wife manage the income jointly and have a common pocket book, or the housewife has a definite allowance for household and personal expenses.

The latter plan usually gives the housewife the task of paying the bills. Some pay in a businesslike way on the first of the month or weekly or bi-weekly at the time of the regular pay day. Some "meet accounts when convenient." One reports "quit spending when purse is empty or credit no good." A great many always pay cash.

But few of the housewives in Richmond make out a budget beforehand to apportion income to various needs;—rent, food, clothing, savings, etc. A few instances were found where it was done to a small degree as the housewife who "sets so much aside for food, savings, etc., and knows just exactly where the money is to be spent each week." Some plan so that more than one large bill does not fall due in the same week. Another, evidently on larger income says, "after each pay day we take out the money we think will be necessary to manage the house and put the rest in the bank." Another "limits amount spent for food so that they may have money for taxes, etc." Most housewives buy what they need and practice economy in general. One has different boxes for money, for food, clothing, etc., and places in each the money apportioned to that expense.

Eight of the housewives visited keep an account of how the income is spent. Some depend on itemized bills from the grocer, butcher and dry goods merchant. Others bank all their money and pay only by check. A great many do not keep accounts at all. Four said they used to keep accounts but had discontinued them. The value of the practice was naively admitted by the housewife who reports, "no account kept excepting spasmodically, when I feel that I have been spending too much."

*Planning the work of the household.*—Owing to the multiplicity of her duties efficient management is the keynote of the housewife's whole job. It is affected directly by the amount of work to be done, age of children to be cared for, help employed and out-

side activities of the housewife. One housewife says she "has a very hard time planning work because baby interrupts so often," and that "daily work varies a good deal because my husband's work makes him miss a good many meals. At rush seasons I may help him at the office." If the housewife is not to be overwhelmed by her work it must be systematized carefully. Most housewives have an invariable weekly schedule such as the following: Monday, cleaning; Tuesday, washing; Wednesday, ironing; Thursday, sweeping upstairs; Friday, sweeping downstairs; Saturday, cooking and baking. Some housewives, notably those with comparatively little to do and many outside interests, or with loose systems, do not wish to tie themselves to any regular schedule but vary it week by week; some plan only from day to day.

There is so much to be gained by reducing the regular daily work to as much of a system as possible. Cooking and cleaning are done every day. A few women set a time limit and give themselves until half past eight or nine in the morning to get the breakfast dishes washed and the necessary cleaning done. A very few plan meals several days ahead in order to make the daily work easier, and buy well in advance so that it is not necessary to run to the corner grocery at the last minute. Most of the housewives interviewed planned dinner and supper after breakfast and did the buying for the day at that time. With one, "meals are planned as time comes; for food I go to nearby grocery and get what I can." Another, "plans meals as they come." Most Richmond families have dinner at noon. With some no leisure seems to be possible. One "works all day and into the night." Afternoons used so far as possible for sewing, fancy-work or other work compatible with receiving neighborly calls.

#### Special Knowledge and Skill Required

*For buying.*—By far the greatest porportion of the retail purchasing is done by women. Groceries, dry goods and department stores, and five and ten cent stores sell to women almost entirely. Drug stores, hardware stores and jewelry stores deal with housewives a great deal although not in so large a proportion. This demands, in every phase, a wide and detailed knowledge of retail prices and markets, both local and general. The woman must know where to go for what she wants, whether it is a house or a hairpin and she must have an idea of what the price should be. Much shoddy material is purchased because

housewife does not know how to use her money to the best advantage and thinks she is paying for utility when she is paying for appearance. In renting or buying a house she must know something of real estate values and the elements affecting them. When purchasing furniture she should also be able to judge it from the point of view of material, finish and construction. In buying fuel she must know prices and kinds available. In buying clothes, linens and draperies for the house she must know textiles; in buying groceries, she must know different brands of stock and how to select meats, vegetables and fruits. Such knowledge would be of mutual benefit to housewife and merchant. Buying involves a knowledge of styles and "the correct thing." It also involves knowledge of facilities for deliveries.

This may be purely local or may demand some understanding of freight, express and parcel post service. She should know the local markets. Another advantage is to know what can be purchased by catalog and something of the reputation of the large mail order firms in the country. It is desirable that she should know the ethics of shopping which involves early Christmas shopping, no late Saturday night shopping and consideration about keeping articles sent on approval.

*For selecting the house.*—In order to select a location for the house intelligently the housewife must thoroughly know the different sections of town. This involves a knowledge of the general character of the neighborhood and its sanitation. For instance, some houses in Richmond are so far from sewers that connection is not practical; in one section bedrock is so near the surface that cellars are very hard to excavate and drainage is difficult. Higher altitudes generally afford better circulation of air and greater freedom from smoke. The housewife should understand the general principles of drainage in order to apply standards to the local situation. She should know something of house construction in order to judge, not only whether the house is conveniently planned for her family, but whether it is well built, including good foundations, good walls, good chimneys and good cellar drainage. The rooms should be sunny, well lighted and ventilated.

*For furnishing the house.*—House furnishing demands a broad knowledge of interior decoration. The housewife should know how to plan the furnishings of the house on the money available. In selecting furniture she should know different woods and finishes



and something of the construction of furniture, in order to be able to buy what is useful, durable, comfortable and easy to keep clean. She should know the wall finishes which are possible, and the textiles best adapted for draperies. All this is merely a foundation for securing beauty of effect and comfort in arrangement. She should be able to achieve harmony throughout the whole house as well as in each individual room, although decoration of each room must be suited to its peculiar need and lighting.

*For keeping the house sanitary.*—The housewife should know enough about plumbing to keep the pipes from getting stopped up, demand the right system and recognize need for repairs. She should know something of water and milk supply. A knowledge of the principles of ventilation and the degree of humidity which is the most healthful is necessary. She should also know how to guard against and exterminate household pests.

The selection of the heating system requires knowledge of house sanitation, general principle of stove heat, and various furnace systems, such as hot air, hot water, steam and the combinations. The actual building and tending of the fire can be learned mostly by experience. The choice of fuel requires knowledge of kinds of wood, coal and gas available and their suitability to the heating system in use. If lamps are used, the housewife should know how to keep them in good working condition. Kerosene and gasoline are somewhat dangerous and the housewife must be able to guard against dangers incident to their use.

*For cleaning.*—The housewife should know the best methods of cleaning and laundry work. She should know the different machines used and labor saving devices. She needs the knowledge of the laundry washerwoman and dry cleaner to adapt cleaning methods to fabrics in removing spots and stains. A knowledge of the different soaps is necessary in order to choose the right kind for her particular use. Besides soap there are many patent cleaners, disinfectants and water softeners which make the work easier. She should know which is most effective and least injurious to the hands and the surface to be cleaned.

*For planning, selection and preparation of meals.*—The housewife must know how to prepare the dishes which are to be served. This involves some experience and careful following of the recipe. She must also know how to make the meals appetizing and healthful; how to set the table neatly and correctly and how to serve. More fundamental than the buying, preparation and serving is a

knowledge of dietetics and the science of nutrition which will enable her to plan a well balanced diet and adapt it scientifically to the material available and the needs of her family.

*For sewing.*—The selection of the wardrobe requires a knowledge of style, color combination and textiles in regard to their durability, beauty and economy and proper adaptation of style and color to figure and complexion. The knowledge required for sewing is discussed in Chapter XIII, "Ladies Tailoring, Dressmaking and General Sewing."

*For caring for children.*—Rearing of children demands special knowledge of dietetics, infant feeding, milk, modification of milk, special foods, etc. The clothing of the child calls for the selection of a specialized style of garment and textile. Household sanitation and hygienic living are more important for children than for grown people. The care of children almost inevitably demands some knowledge of nursing. In order to train the child the mother should know something of child psychology and kindergarten methods. She must know how to teach the children and direct their work and play.

*Accounting.*—The housewife should know how to apportion expense to income. She should know what proportion may be spent for shelter, operating expense, higher life, clothes and food. Budget making is really more essential to scientific housekeeping than the strict keeping of accounts. Accounts must be analyzed to be of value. No great knowledge of bookkeeping is necessary to household accounting.

*Household management.*—The housewife must know how to plan her work so that there will be no waste movements. She must have such a knowledge of relative values as to know what may be neglected. Dusting the piano is important but not so important as budget making and diet planning. Efficient management of such multiplicity of tasks requires real executive ability.

### **The Housewife and Public Health**

Urban life has made desirable the shifting of the responsibility for certain household problems from individual to community concern. The result is that the woman can no longer confine her work to the four walls of her home but must perform some of the household functions in a public way.

*Housing.*—The selection of the house is simplified by the limits imposed on house construction by the State Housing Code. These

laws fix a minimum standard in regard to the actual construction, safety from fire and over-crowding, both on the lot and inside the house. There is at present no plumbing code or inspector of plumbing in Richmond.

*Sewage, garbage and refuse disposal.*—The disposal of sewage is necessarily a public function. Housewives must act together if an adequate sewage disposal system is to be secured. Lack of facilities for sewage connection and the consequent large number of privy vaults in Richmond constitute a menace not only to the particular neighborhood in which they exist but the whole city.

Many housewives report that garbage disposal is not satisfactory. They have to call the town hall to get service at all. One woman in Riverdale couldn't remember when garbage had last been collected. Here again the individual responsibility is of a public nature.

*Purity of water, milk and food supply.*—The water supply is first of all a concern of the individual housewife. The widespread use of cistern water for all but drinking purposes makes this a question of individual concern in many instances. For the purity of the milk supply the housewife is almost entirely dependent on standards and honesty of the dealer as guaranteed by the vigilance of the city inspector. Only ten of the housewives visited had actually seen the dairy from which their milk came. A few more had made inquiries of the inspector. Where there are babies, inspection of the family milk supply is of the greatest importance.

The food inspection is no less a public function than milk inspection. Laws provide for the proper construction, ventilation, lighting and plumbing of all buildings in which food products are handled as well as illegalized dirt and adulteration and the employment of workers sick with communicable disease. The enforcement of such laws, however, depends upon the community-conscience.

*Public utilities.*—Public utilities of any nature affect the work of the housewife in some way. Cheapness and adequacy of the gas supply have made it possible for most Richmond housewives to use it for cooking. Cheapness and efficiency of electric light service have brought this most convenient of lighting systems within the reach of almost everyone.

The cleanliness of the streets affects most directly the amount of house cleaning necessary and the public health. Street cleaning and sprinkling are therefore of direct interest to the house-

wife. The kind of paving makes a great difference in the amount of noise and the degree of cleanliness possible.

*Summary.*—The housewife should know the housing code, ordinances regulating the disposal of garbage, refuse and sewage; laws regulating the milk and water supply and production and distribution of food and public utilities. She should know the laws governing education and the employment of children. It is desirable that she keep in touch with the work of the Federal Childrens' Bureau.

Knowledge of the laws is not sufficient. She must know them critically and use her influence to the utmost to secure better and more adequate legislation. She should make it a special point to demand enforcement of the law and report any violations of the law to the proper authorities.

*How special knowledge and skill are acquired.*—About half of the housewives visited had learned what they know of housework as girls at home. Twelve learned after they were married by painful experience and careful study. These methods of learning afford at best a more or less traditional and unscientific knowledge of the job. Some of the college women who had no special training at all had studied it alone, not only from the purely practical standpoint of recipes and patterns, but had mastered the underlying theory of nutrition, dietetics, clothing, etc.

Many take some magazines which deal with household work. Good Housekeeping was the most popular. Of the fashion magazines seven take the Ladies Home Journal, four The Pictorial Review, five The Delineator, and one the Harper's Bazaar. Four take American Cooking. Only one is getting the Government publications on Home Economics. Most of them use cook books of some kind; several mentioned the Boston Cooking School Cook Book; some use only the cook books given away as advertisements for some special food or cooking device.

Only nineteen had taken any special courses in household work. Five had worked in dressmaking shops. Adequate data in regard to the number of housewives enrolled in night school could not be secured, but seventy-seven of those in attendance definitely specified that they were occupied as housekeepers; about one-third of these were taking work not related directly to domestic science.

Ten of the mothers visited learned to care for children as girls at home. In almost every case the mother learns something from

the doctor and from the nurse. Here again a large number stated that they had learned mostly by experience and by reading. Several commented on the increase of the literature available. Many take the Mother's Magazine. Several learned by experience which they frankly characterized as experimental. For instance, one "experimented on the older boy, so that the younger boy got along much better." One says she "made no study of the matter at all." Another says she "just picked it up." Another, "after the birth of the first three children, I made some study of infant care."

### Variable Factors in the Work of the Housewife

*Composition of the family and size of house.*—Table 18 shows the variation among the different housewives visited. Forty-two live in houses of from six to eight rooms. One family of six lives in two rooms. The largest group (14) have four in the family. Six have eight or more in the family.

TABLE 18  
NUMBER OF FAMILIES OF SPECIFIED SIZE PER NUMBER OF  
ROOMS OCCUPIED

NUMBER IN FAMILY	Number of Rooms in House or Apartment									Total
	2	3	4	5	6	7	8	9	10 or more	
1.....						2				2
2.....						5	4		2	11
3.....				1	3	1	3	1	1	10
4.....				2	4	2	2	1	3	14
5.....				1	1	2	2	1	1	8
6.....	1		2	1		1	2		2	9
7.....				2	2	2	1			7
8 or more.....			1	1	2		1		1	6
Total.....	1		3	8	12	15	15	3	10	67

Every added room in the house means one more to furnish and keep clean. However this depends quite as much on the number of occupants. That is, it is harder to keep a few crowded rooms clean than it is a larger number of rooms with the same size family. The presence of children in the family makes more work of course. Work differs according to age and sex. It is some-

years before the boy or girl is competent to "earn his keep" in the household. The work of some members may require irregular meal times, or early breakfasts. One housewife gets from six to eight breakfasts, one after the other, every morning for the various members of the family.

*Servants.*—Only eight of the housewives interviewed kept servants all the time. Two servants relieve the housewife of all the actual work, except planning and supervision. One servant relieves the housewife of the routine of cleaning, sweeping, dusting, washing dishes and cooking. In Richmond the care of children is not delegated to servants except in a very minor way. The amount the servant does, however, depends on her ability and training. Nearly one-third of the housewives studied, employed women for the day to do washing and cleaning. The work most frequently done by day workers is laundering, scrubbing and cleaning. Women who employ seamstresses in the home turn over to them the mending and remodeling and plain sewing which they would otherwise do themselves.

The actual work is lightened by the employment of servants, but the employment of servants and their proper supervision requires managerial ability. The housewife should know how to do the actual work in order to direct it intelligently. Checking up waste is more difficult when servants are employed. She must know how to train for housework for she can rarely find a maid who is satisfactorily trained. As a matter of fact, housewives who employ maids have a higher standard of living, the realization of which demands more attention to table service, clothing and interior decoration.

*Assistance to other members of the family.*—The problem of the selection of the home is so fundamental to the good of the whole family that the whole responsibility should not be taken by one member; and furthermore, this problem is of such a general nature that sharing of responsibility is possible. Older children may take over a large part of the work and the responsibility of the home. School training in domestic science, which is received by the girls in Richmond, may react on the home work so strongly as to mean a practical reorganization of the household tasks.

*The husband.*—The husband shares responsibility for the larger aspects of the work. Certain duties are by custom usually his, such as building fires, making minor repairs and caring for the lawn and garden. As a usual thing he knows more than she about plumbing, heating, drainage and the public problems of

sewage disposal, water supply and building regulation. The selection of furniture is frequently shared by the husband because he usually knows more about kinds of wood and furniture construction. In fact, he may complicate the whole scheme of furnishing by a propensity to auction sales or bargains in furniture. A few housewives say they have learned to cook and bake from their husbands. Care of the children, household accounting, housing and interior decoration may well be shared responsibilities and duties. When the man manages the money, he may neglect the buying of labor saving devices and sanitary arrangements.

*Effect of occupation of wage-earners on work of housewife.*—

The occupation of the wage-earner is considered in this section in so far as it conditions the family income. It was difficult to decide on a basis for division into types of the families visited. Roughly, they were divided into four types according to employment: W, professional workers; X, merchants, factory superintendents and managers; Y, salesmen and skilled tradesmen, and Z, unskilled laborers. Classes W and X would, of course, bring in the largest income, and Class Z, the smallest. Merely the fact of a more limited income increases the work of the poorer housewife because she cannot employ assistance, buy labor saving devices or have as great a spending margin. Only one of the class Z housewives has her laundry work done. She has a family of eight. Seven of each W and Z, beside those who kept maids, had laundry work done by someone else. Of the eight housewives visited who employed maids, four were of Class X, three of Class W and one of Class Y; of the labor saving devices reported, electric irons were used by two of Class Z as compared with nine of Class X, eleven of Class W and eight of Class Y. About as many of Class Z have washing machines as of the other types but that is partly offset by the fact that more women of higher income send the laundry work out of the house and many of the poorer housewives take in washings to supplement the income. More of the X type than any other had vacuum cleaners.

The smaller the margin between the income and the expenditure necessary to bare subsistence, the more difficult it is to plan ahead even to the extent of buying in quantity. One housewife says "they buy from meal to meal and select the cheapest food."

Other things being equal, it is evident that a smaller income demands more work and solution of harder problems for the housewife. But other things are not equal.

TABLE 19  
NUMBER OF FAMILIES OF SPECIFIED TYPE AND SIZE

TYPE OF FAMILY	Number in Family										Total
	1	2	3	4	5	6	7	8	9	10 and over	
W. ....	2	4	3	5	1	.....	.....	.....	.....	.....	15
X. ....	.....	3	3	5	2	3	1	.....	.....	.....	17
Y. ....	.....	4	4	3	3	2	2	1	.....	.....	19
Z. ....	.....	.....	.....	1	2	4	4	2	2	1	16
Total.....	2	11	10	14	8	9	7	3	2	1	67

*Effect and size of family.*—Table 19 shows that, on the whole, the size of the family is in indirect ratio to the income. Of the W type there was only one family with as many as five members; one of the X type with as many as seven members and more than fifty per cent. of the families of the W, X and Y types had from only two to four members. Fifty per cent. of the Z families visited had seven members or more. On the whole, the housewife of limited means has not only more to do but more people to do for. Work is harder in the Z type families because unskilled laborers do dirtier work and so bring more dirt into the house and get their clothes more soiled.

TABLE 20  
NUMBER OF FAMILIES ACCORDING TO TYPE AND NUMBER OF ROOMS OCCUPIED

TYPE OF FAMILY	Number of Rooms in House or Apartment									Total
	2	3	4	5	6	7	8	9	10 or more	
W.....	.....	.....	.....	.....	2	5	5	.....	3	15
X.....	.....	.....	1	.....	2	3	4	3	4	17
Y.....	.....	.....	1	2	6	5	3	.....	2	19
Z.....	1	.....	1	6	2	2	3	.....	1	16
Total....	1	.....	3	8	12	15	15	3	10	67



*Effect of size of house.*—Coupled with the size of the family it is also true that the poorer housewife has fewer rooms to care for. Table 20 shows the poorer families live in smaller houses. Half of the Z type families live in five rooms or less while two-thirds of the W type occupy seven or eight rooms.

TABLE 21

NUMBER OF FAMILIES ACCORDING TO TYPE OF FAMILY AND EDUCATION OF HOUSEWIFE

TYPE OF FAMILY	Less than 8th Grade	8th Grade	High School not Graduate	High School Graduate	Some College Work	Not Reporting	Total
W.....		1	1	3	10	.....	15
X.....		2	.....	7	4	4	17
Y.....	4	6	5	.....	1	3	19
Z.....	7	7	.....	1	.....	1	16
Total....	11	16	6	11	15	8	67

*Effect of education of housewife.*—Not only has the poorer housewife harder problems to meet but she has less general knowledge and mental training with which to meet them. Table 21 shows that nearly half of the Z housewives are not grammar school graduates. Only one of the Y type has a complete high school education. As compared with this, two-thirds of the W type housewives have had some college work. More of the X type housewives have taken special courses than any of the others.

The difficulties incident to the lower income necessitates a lower standard of living. Poorer housewives do not cook so much or serve so elaborately. They sew less and mend more. Standards for style and amount of clothing are lower. Houses are not so completely furnished so there is less to keep clean. Limited education makes it impossible for the housewife to help the children in their school work.

*The wage-earning housewife.*—Fifteen of the housewives visited were themselves earning money. Five were doing washing and cleaning, three were taking boarders, one worked in a factory, and three were professionally employed. Outside employment means necessarily that the housework is neglected. With some

women it is reduced to a matter of distinctly secondary importance. Women who earn a good salary can have much of the household work done by others and so maintain high standards. The woman who is earning only a dollar or a dollar and a half a day, must expend all of it for the bare necessities of life. The house must go dirty. The children are ragged and given responsibilities beyond their years. Sewing is neglected and cooking is done poorly and without system.

*The immigrant housewife.*—The foreign population in Richmond is at present proportionately small and not rapidly increasing. The most evident difficulty peculiar to the immigrant housewife is her ignorance of the English language. This made it difficult for the Survey to obtain information in regard to her work. She is limited in her buying to the stores where she can make herself understood or is obliged to depend on the children. She has the problem of adjusting European ways of housekeeping to American customs. Some of the immigrant families send to large importing firms to get the kinds of food to which they are accustomed. Most immigrants in Richmond work as laborers or small shopkeepers, so the foreign housewife has the burdens added by meagerness of income. She cannot of course help the children in school work.

#### Attitude of Housewives to Continuation Courses

Most of the housewives showed interest in continuation courses. Sewing was especially desired by eighteen. Cooking, nursing and sewing were frequently mentioned. Four housewives wished the fundamental theory courses regarding dietetics and nutrition. Many of the housewives visited were older women who felt that they had solved the problems and that the school could not now help them. Many of these stated they would have been glad of such an opportunity in their earlier years of married life. Those with large families felt they could not find time to pursue courses. Mrs. B. said she "would not have time to take any course while baby is so small." The wage-earning women either regard the housework as a subordinate issue or are too busy to take further training. One says she has "no time for any help as she must earn most of the living by washing." A few, notably the foreign housewives, want training in English and other academic subjects rather than in household work.



## CHAPTER XXII

### HOUSEHOLD EMPLOYMENT: THE GRADUATE, PRACTICAL, JUNIOR AND HOME NURSE

*History of the occupation.*—In A. D. 380, Fabiola, a rich patrician lady of decadent Rome, inspired by religious motives, founded the first hospital known in the world's history. She and her helpers nursed the sick, cared for the weary and fed the hungry and others followed her example.

When, in 1544, St. Bartholomew's Hospital in London was re-established by Henry VIII, a corps of one matron and twelve nurses were employed on regular and part-time duty. The women employed were domestic servants, serving at their regular occupation when not on duty at the hospital. They were hard working drudges without education or training.

Three centuries later, in 1836, Pastor Fliedner gathered a group of devout women about him at Kaiserwerth and founded an institute for the training of nurses. Occasional lectures had been given in many hospitals in England, America, France and Germany by physicians particularly interested in certain aspects of training, but no steps had been taken to organize or systematize the work. Pastor Fliedner, like Fabiola, was imbued with the force of religious motive and his insight into the needs of the occupation gave new impetus to its progress. Two years later The Society of Friends in Philadelphia founded a similar nursing organization. Twenty years later the horrible conditions on the battlefields of the Crimea inspired Florence Nightingale, a trained English nurse, to extend the field of nursing to the distant battlefields. The relief and lowered death rate among the wounded soldiers forced new issues upon the medical world. The question of the required amount of special knowledge and skill led to the establishment, in 1860, of a hospital training school in connection with St. Thomas' Hospital, London, wherein the work was definitely divided into probation, training, and actual service. Definite courses of study were organized, standards of physical and mental qualifications were indicated and recognition was given individuals completing the course.

It was not until 1880, however, that the religious motive

was supplemented, and, in many cases, supplanted by a scientific interest in the profession. The invention of new instruments and scientific progress in medicine made possible giant strides in the nurses' work, until now it is a recognized profession of high standing.

*Status of the occupation.*—The occupation of graduate nurse, due to state control of qualifications and training, has attained the status of a profession. Definite moral, physical and mental qualifications are now required, as well as three years of training in an accredited training school.

Such standardization has resulted in a high wage schedule and given rise to the complimentary occupation of practical nurse. The great mass of people are unable to pay the standard wage of the graduate nurse so that their need has been met, not by the scientifically trained expert in nursing, but by the semi-skilled or unskilled nurse whose status depends upon the individual's particular experience, prestige and adaptability. No definite standards of qualifications have been required of this type of nurse either by the housewife or the physician with whom she worked. In a few states efforts have been made to standardize the qualifications of the practical nurse through required registration, but in Indiana there is no such law. The status of the practical nurse in Richmond varies from that of experienced servant to the intelligent woman who ranks alongside the graduate nurse.

The term "Junior Nurse" is here applied to young women who care for children during the absence of the parents. The work bears no direct relation to nursing as a profession.

The work of the home nurse is also unstandardized. It is not recognized as a distinct occupation and was studied by the Survey as a part of the work of the housewife. It is considered here in relation to the problems of the qualifications and education of all women doing nursing.

*Scope and purpose of the study.*—The actual work of the graduate nurse does not lie legitimately within the field of this Survey owing to its present professional status, but a comprehensive discussion of the problems of nursing in Richmond must include consideration of the pre-vocational training of nurses and the requirements for entrance to hospital training. The occupation of practical nurse has been studied to ascertain the obvious deficiencies in the personal qualifications of the worker, the educa-

tion and training received and the possibilities of further training and social control of these factors in view of probable standardization.

The work of the junior nurse was studied by the Survey owing to the large number of young women in Richmond engaged in it as an occupation during their college course and because such work is frequently the training school of the practical nurse.

The work of the home nurse was studied to determine the actual requirements necessary for the efficient nursing of convalescent and light cases in the home. It is assumed that serious and complicated cases should not lie within the field of the unskilled home nurse.

*Occupations and number employed.*—According to the United States Census of 1910 there were 1,612 registered or graduate nurses in Indiana, 1,516 of whom were women. In Richmond there are sixteen graduate nurses reported in the city directory and twenty-two in the county register. The census reports 2,481 midwives and practical nurses in Indiana, 2,138 of whom are women. It is estimated, however, that there are ten times this number of practical nurses in Indiana.

In Richmond there are forty-two practical nurses listed in the drug stores, two of whom are men. It is probable that this figure includes about one-third of those actually employed in this type of nursing.

No data was obtained regarding the number of young women doing junior nursing. The housewives interviewed stated that they obtained the services of the young women through the Y. W. C. A. Employment Bureau at Earlham College and seldom employed the same young women continuously.

Sixty-five hundred housewives are estimated as residing in Richmond, all of whom are probably, at some time, employed as home nurses, or as assistants to a trained nurse.

### The Graduate Nurse

*Vocational problem involved.*—In the study of the training of the graduate nurse, it was the purpose of the Survey to ascertain: (1) The usual age at which nurses complete the secondary school course; (2) the age required for entrance upon hospital training; (3) the possible gap of years between the completion of the secondary school course, and the entrance upon hospital training; and (4) a possible economic use of the intervening years.

It was ascertained that the usual age on completing the secondary schools is seventeen years. The age required for entrance upon hospital training is practically determined by the State law which reads: "Applicant shall furnish satisfactory evidence that he or she is twenty-one years of age, of good moral character, has received the equivalent of a common-school education and has been graduated from a training school for nurses connected with a hospital approved by the Board, where a systematic course of three years of instruction is given." The entrance age is definitely fixed at eighteen years.

Eighteen hospitals in Indiana report the following preferred ages of applicants for entrance: Two, eighteen years; five, nineteen years; two, twenty years; and three, twenty-one years or over. Six did not report the definite age preferred. The tendency, however, is toward greater maturity.

It is seen from the foregoing that for the future graduate nurse there may be a gap of from one to three or four years between her graduation from the high school and her entrance upon hospital training. The problem of how to best utilize the intervening years may be met by a study of the educational requirements of the hospitals of the State, since the problem is not limited to Richmond.

*Educational requirements.*—Of the eighteen hospitals reporting entrance requirements, five required the completion of a secondary school; eleven required the completion of the elementary school but prefer graduates of secondary schools; one required the completion of one year of secondary school work, and one required the completion of two years of secondary school work.

*State training requirements.*—The State of Indiana requires of the trained nurse, that she shall have taken a three years' course in an accredited training school covering the following subjects: Anatomy, physiology, bacteriology, hygiene and sanitation, medical and surgical nursing, nursing in children's diseases, gynecological and obstetrical nursing, nursing ethics, materia medica, practical nursing, and dietetics. In one or two instances, household economics, chemistry, biology and kindred subjects are added to the State curriculum. The care of the patient, such as bathing in bed, giving douches, enemas, etc., and the care of the sick room are obtained through actual experience in the hospital.

### The Practical Nurse

*Source of information.*—For the intensive study of the work of the practical nurse there were three sources of information available: The employer, or housewife; the physician, under whose direction most of the work is done; and the nurse herself. Interviews were obtained from ten nurses, one of whom was a male nurse; ten housewives, covering the work of thirteen nurses; and six physicians. With the exception of one, all the nurses interviewed seem satisfied with their occupation. This is largely due to the fact that although economic necessity has pressed them into wage earning, their efficiency and personal inclinations dictated the choice of occupation. Six of those about whom information was obtained were widows, and one was a single woman advanced from a servant on account of her "knack of caring for the sick." Three were "in love with their work." The one male nurse interviewed was sixty years old and out of work. All of those interviewed were American born and four were natives of Indiana.

The employment of such a large number of practical nurses in Richmond prompted the Survey to investigate the qualifications and deficiencies of workers, and the conditions of labor, for the purpose of ascertaining what courses of study could be given in the public schools to better equip the future practical nurse, what complementary continuation courses could be given to practical nurses already in the field, and what scheme of public control could best be adopted by the city of Richmond.

*Nature of cases taken.*—Of the cases reviewed ten were obstetrical, two post surgical and three post obstetrical. Seven of the nurses reported most of their cases as obstetrical, two reported frequent calls for post surgical care, and one, for all light cases. Three took contagious cases when called, but rarely received such calls. Four positively declined to take any contagious disease; four had taken several cases of pneumonia; two refused all cases of old people, and one took only older people. Three were willing to take all kinds of cases and one took tubercular and mental cases most frequently.

The physicians interviewed reported their work with practical nurses as mainly obstetrical. In the poorer families, they recommended these nurses for chronic or light cases, although one physician seemed satisfied with the work of a practical nurse in a case of typhoid, and one in a case of pneumonia. They rarely recommended a practical nurse for a contagious disease.



*What the worker does.*—The nurses reported their work as: (1) Care of patient, under which four reported special cooking; four, baths in bed; four, use of carbolic acid and boric acids; two, the giving of enemas; four, the use of the thermometer; one, the use of the hypodermic syringe; two, the use of the catheter; two, the keeping of a hospital chart; and one, the giving of douches; (2) care of the room, under which four reported the use of disinfectants; (3) care of baby, under which the bathing, feeding and washing of the clothing was included; and (4) the general work under which two reported all general housework of small families; five reported the cooking for a family of any size; one, no general housework; and three, assistance in the housework by servant.

The ten housewives reported that the duties of the practical nurses employed by them are to care for the patient and baby, and also to take care of the room and general housework of the home. Eight reported no special diet required and two reported special cooking for the patient. Six reported that no housework had been expected of them; eight reported doing all the housework, and three reported receiving assistance from other members of the family in doing housework. Only two reported giving bed baths.

The physician's statement of the scope of the work of the practical nurse was less definite. Three stated that few practical nurses could take the temperature of the patient. All those interviewed doubted whether a practical nurse could use a hypodermic syringe or catheter, give douches properly, or keep a hospital chart. As to other work than the care of the patient, the physicians thought a nurse was usually expected to do the baby's laundry, care for the sick room, do some general housework when the family was small and sometimes assume all the duties of housewife, such as ordering supplies, cooking, cleaning, and caring for other children. When no physician attends an obstetrical case the nurse is required by law to register the birth of the child.

*Mental and physical requirements.*—Of the ten practical nurses interviewed, five were sixty years old, four were between fifty and sixty, and the unmarried woman, advanced from household service, was thirty-five. All physicians interviewed favored younger nurses, but the housewives interviewed preferred the older nurses. Aside from age, seven housewives reported the need of unusual strength, seven reported the need of good judgment, five reported the need of personal neatness and neatness about their work, five reported the need of good health, four specified an attractive per-

sonality as essential, two specified an amiable disposition as a prerequisite, two emphasized the need of a clear memory and others mentioned the advantage of alertness, kindliness, intelligence and truthfulness.

The physicians demanded conscientiousness, neatness, honesty and physical ability to lift, bathe and attend the patient, but no definite standards of physical or mental requirements are recognized by them. It is to be assumed that sound health, large physique, good hearing and eyesight are essential to meet the physical demands of the occupation. Tact, resourcefulness, good memory, judgment, conscientiousness, a cheerful disposition and cleanly habits are essential to success.

*General education required.*—Two of the nurses interviewed had finished an elementary school course in the country; the others had dropped out apparently before the eighth grade, as they did not give accurate data. The more intelligent deplored their deficiencies and thought that every practical nurse should graduate from a secondary school before entering the field of nursing. The housewives specified as prerequisite the ability to read and write; the physicians emphasized the ability to read instructions accurately and write legibly on the charts. Both physicians and housewives thought an elementary school course essential and a secondary school or college course very desirable.

*What the nurses lack.*—Of the fourteen nurses employed by the housewives interviewed, ten were reported as having done their work satisfactorily, and four as unsatisfactorily. One patient required an operation due to improper care at the birth of her child, and another reported infant eye infection due to the carelessness of the nurse. One mother reported the saving of her infant's life due to the good judgment and speed of the nurse in attendance. Upon closer investigation it was found that the housewives employing practical nurses are generally of the poorer class. The practical nurse is called in only at the time of their child bearing, which in eighty per cent. of the cases is normal and without the result of serious complications due to the lack of surgical cleanliness. Where complications arise the patient is as ignorant of the requirements of the case as the nurse and therefore does not trace the result to the inefficiency of the nurse. The physicians picture the work of the practical nurse in dark colors. One surgeon interviewed expressed a horror of their work. The others, more lenient in their judgment, found, nevertheless, a long

list of deficiencies, chief of which was a lack of open mindedness or ambition to learn. Specifically, the practical nurse has been found to be faulty in the knowledge and use of antiseptics, surgical cleanliness, general technique of the care of the bed, bathing of patient, use of thermometer, catheter, hypodermic syringe, douche and enema procedure, as well as ignorant of medical terms, chart keeping and emergency methods.

*Special knowledge required.*—The practical nurse being employed, almost exclusively by families unable to employ a servant is required to know how to cook and clean house. She is generally selected by the housewife on the basis of her ability to keep house and cook well. The housewives, when questioned, thought that a knowledge of dietetics, proper care of the patient and sick room, medical terms, emergency measures, proper ventilation, use of disinfectants, as well as a working knowledge of physiology, anatomy and hygiene, were essential for success, but none of the nurses they had employed had even a slight knowledge of these subjects.

The physicians enumerated the special knowledge required as follows: Some knowledge of technical terms, anatomy, sanitation, hygiene, physiology, theory of surgical cleanliness, bathing, alcohol rubs, care of the bed, giving enemas, douches, hypodermic injections, catheterizing, taking temperature and a knowledge of emergency measures and dietetics. Aside from these purely technical requirements, the physicians recognized the necessity for a knowledge of general housework.

*Special skill required.*—A special type of skill is required by the practical nurse in bathing, lifting and massaging a patient while in bed. A high degree of specialized skill is required in using a hypodermic syringe, a catheter and a douche or enema outfit. Special skill in bandaging and in emergency measures is essential. The caring for a new born infant requires skillful manipulation in bathing, rubbing, dressing and handling.

*How special knowledge and skill are obtained.*—The special knowledge and skill required for a practical nurse is obtained in three ways, e. g., by experience either as a paid or unpaid nurse in the home or elsewhere, by instruction from physicians under whom they are working, or by reading books and magazines on the subject. Four nurses reported having acquired their knowledge and skill by experience in their own family, four learned through the care of neighbors, seven reported having learned the major part of their knowledge through experience on their cases, and

five reported having learned a great deal from the physicians with whom they worked. Four reported acquaintance with books and magazines of a professional nature, one helped in a sick room while a servant in the home, one reported twenty-one months in a hospital training school and one reported having taken a Chautauqua correspondence course. The housewives and physicians interviewed concurred with the reports of the majority of the nurses in that the special knowledge and skill are obtained mostly by experience on the job.

*Promotion.*—The only promotion possible to a practical nurse is in advanced salary and greater frequency of cases. Three nurses had been nursing for ten or twelve years, two for five years, one for four years and one for three years. The others stated that they had been nursing all their lives. The advancement gained during this working period, had, in most of the cases, been very slight. The nature of the work requires a short rest period between cases, which makes too great a frequency of calls undesirable. The fact that they are employed by people who cannot afford more competent nurses limits their advance in salary.

*Source and selection of workers.*—In the majority of the cases the nurses were selected upon the recommendation of relatives and friends. Of fifteen cases of employment, seven were upon recommendation of relatives or friends, four upon recommendation of the attending physician, two upon reference to the list of registered practical nurses in local drug stores, and three upon personal trial. Most of the nurses were registered at one or more drug stores in the city, one had given her card to the physicians with whom she worked, but all depended chiefly upon their former employers and friends to recommend them. The selection of a nurse is most frequently made by the employer either upon the advice of a physician or friend, the physician assuming no responsibility for the financial transaction or the efficiency of the nurse.

*Working hours.*—Where work and salaries are as unstandardized as in the case of the practical nurse, the working hours depend almost entirely upon the individual. Eight of the ten housewives interviewed stated that the nurse was expected to be on duty all of the twenty-four hours. Eight hours of sleep and two hours of rest during the day are presumably obtained at such times as are convenient to the patient, that is, they are obtained when the nurse's services are not required by the patient. Five

physicians coincided with this opinion, but one stated that he made arrangements with the family for ten hours of rest for the nurse. Six of the practical nurses also stated that they were on duty twenty-four hours daily, but three stated that frequently, when the work was done, they took an hour or two off for recreation; three insisted upon two hours off during the daytime, and one required three hours off duty during the day. The male nurse interviewed worked only on a twelve-hour shift.

*Seasonableness.*—Although the demand for the work of a practical nurse is almost constant throughout the year, several of the physicians reported a slight decrease in the number of cases demanding this type of nursing during the spring and fall. The increase in children's illnesses during the summer makes it a strenuous season for the practical nurse, and the illnesses resulting from the cold weather make January and February very busy months. In obstetrical work the nurse frequently loses a week or two between cases but those interviewed stated that at least this much time was required between cases for rest.

*Wages.*—Of the wages reported by the employers the lowest was four dollars and fifty cents a week and the highest twenty dollars, the average being slightly over thirteen dollars a week. The physicians reported the range of weekly wages from seven to twenty dollars with an average wage of fifteen dollars. This, it is seen, is slightly above the average reported either by the employer or the nurses. The nurses reported a range in wages from ten to twenty-five dollars per week with an average wage of thirteen dollars per week.

*Working conditions.*—The conditions under which practical nurses work range from the unsanitary filth of the poor country and city slum homes to the comfort and convenience of a well equipped household. One nurse interviewed took a majority of the poor cases and worked almost constantly under very bad conditions, by which is meant, no plumbing conveniences or separate sleeping accommodations. Three of the nurses reported that they most frequently slept in the room with the patient and the same number reported that on most of their cases they were given a separate room. The physicians reported the working conditions of practical nurses as generally very good, but as they had no standard of good conditions in mind, their descriptive adjective is of little value. The lack of standardization is noted here as elsewhere throughout the study of the practical nurse.

*Hazards.*—The consensus of opinion of the practical nurses, housewives and physicians seemed to be that there were no inherent hazards in the work of the practical nurse. As they rarely take contagious diseases, the danger of infection is very slight. The strain upon the back in lifting patients was mentioned by several nurses, but assistance in such work is usually obtained from some member of the household or the patient herself. The nervous strain is seldom severe. The frequent rest of a week or two between cases gives ample opportunity for recovery from the nervous strain undergone.

### The Junior Nurse

*Source of information.*—For the study of the work of the junior nurse the Survey interviewed four typical employers who were housewives requiring the services of an intelligent young woman to care for their children during their absence.

*What the worker does.*—The junior nurse stays in the house and cares for the children while the parents are away. In the families studied there were from one to three children. The employment is usually for the evening and the children are generally asleep when the parents leave. However, the junior nurse is at times required to feed the baby according to the directions of the mother, undress and put the baby to bed and sometimes prepare a meal that has been planned by the housewife. One junior nurse cared for the baby during the day and did the baby's laundry.

*Mental and physical requirements.*—Good health, reliable conscientious disposition, a liking for children, and the ability to meet emergencies intelligently are required of a junior nurse.

*General education required.*—Most of the junior nurses in Richmond are students in Earlham College and so have had an unusual general education. At least an elementary education is required and a secondary school education is desirable for work in junior nursing.

*What the junior nurses lack.*—The junior nurses in Richmond show no marked deficiencies owing to their extended education, but some are reported as unable to manage children.

*Special knowledge and skill required.*—Some experience with children is desirable, and a knowledge of how to prepare milk and care for a baby is essential. For continued work in this field a knowledge of bathing, dressing and doing a baby's laundry would be beneficial.

*How special knowledge and skill are obtained.*—Although a general knowledge of the care of children should have been acquired prior to going into the field, all specialized knowledge and skill may be obtained on the job.

*Promotion.*—No direct promotion is possible but experience in this field leads directly into practical nursing.

*Source and selection of workers.*—The employers interviewed had obtained the services of the junior nurses through the Y. W. C. A. Employment Bureau at Earlham College. The selection was made by trial on the job.

*Working hours and wages.*—The employment of the junior nurse is irregular. Her services are usually required during the afternoon or evening. The working conditions are good. There are no inherent dangers and the wage paid is ten cents an hour.

### The Home Nurse

*Source of information.*—In spite of the increasing demand for trained nurses the bulk of all nursing is still done by the housewife and therefore a comprehensive study of the occupation of nursing must include an analysis of the home nurse or housewife. For this purpose a list of questions on nursing was included in the schedule of the housewives interviewed. Sixty-one reports were obtained, being typical of the work of 6,500 housewives in the city of Richmond.

*Scope and purpose of the study.*—The scope of this study includes all the work of the housewife connected with the care of the sick, such as invalid cookery, care of the sick room and use of disinfectants. The purpose of the study is to determine the exact nature of the work done, the requirements of successful home nursing, the deficiencies of the home nurse and the possible means for improvement.

*Nature of the cases taken.*—Of the sixty-one housewives reporting on home nursing, four had nursed cases of typhoid, five had nursed diphtheria, eight had nursed scarlet fever, two had nursed pneumonia, one had nursed a serious kidney affection, one had nursed a tubercular patient back to sound health, ten had nursed minor and children's diseases and four had nursed general illnesses not listed above.

*What the worker does.*—The home nurse, aside from her duties as housewife, prepares special diets for patients; disinfects uten-

silts, clothing and linen from the sick room; gives special care to the cleaning and arrangement of the sick room; gives medicine to the patient; and takes general care of the patient such as bathing, alcohol rubs, massages, enemas and special treatments when necessary. Seventy-two per cent. of those interviewed had done all the nursing in the home and twenty-five per cent. had nursed serious cases.

*Mental and physical requirements.*—The home nurse should be mentally alert and able to recall accurately the physicians' directions. She should be physically strong and of sound health. Her personality should be pleasant and cheery.

*General education required.*—For her duties as home nurse, the housewife should have completed a secondary school education. General knowledge of physiology, anatomy, physics and chemistry are especially desirable.

*What the nurses lack.*—The majority of home nurses have been found not only to lack the advantages of a thorough general education but also to lack the special knowledge and skill demanded of them. One housewife of the sixty-one interviewed has a scientific knowledge of nursing. Only one-third of those interviewed had any knowledge of invalid cookery or the use of disinfectants and less than one-fourth knew the simplest first-aid measures. Eight women did not know the names of any of the common antiseptics and eighteen housewives professed a total ignorance of the field. One-fourth of those interviewed had a slight knowledge of the general care of the patient but only one-tenth could detect contagious diseases. All of those professing a knowledge in the use of disinfectants, general care of the patient and invalid cookery, stated that their knowledge had been acquired in connection with a specific situation and it is to be seriously doubted if the knowledge, even in these cases, would be broad enough to carry over into different situations. The ignorance of the use of the thermometer, hypodermic syringe, catheter, douche and enema outfit, materia medica, as well as a working knowledge of physiology, anatomy, sanitation, hygiene and surgical cleanliness are marked deficiencies of the home nurse.

*Special knowledge and skill required.*—As definite a range of special knowledge and skill are required of the home nurses as of the trained nurses. They should be able to detect contagious diseases in the incipient stages and know when to call a physician. The list of specialized subjects and skill required have been



reported under the study of the practical nurse. Aside from these a home nurse should be able to recognize the difference between proprietary and patent medicines and how to use the former in cases not requiring the attendance of a physician. Twenty per cent. of the housewives used patent medicines while forty per cent. claimed that they used none. The confusion of proprietary and patented medicines led many of those interviewed to inaccurately report the use of either. Nearly one-third used simple home remedies such as castor oil, peroxide, cascara, camphor, turpentine, lard, herbs, iodine, liniments, kerosene, antiphlogistic, quinine and vaseline. An accurate knowledge of the use of these and other simple remedies are prerequisite to efficient home nursing.

*How special knowledge and skill are obtained.*—The home nurse has at present but two means of acquiring special knowledge and skill in her work aside from training in a hospital which is obviously impracticable. They are experience on the job and reading available literature on the subject of nursing. The former probably costs the city of Richmond several hundred lives a year and the latter is open to several serious objections, chief of which is the impossibility of teaching most of the subjects from written instructions. A knowledge and skill of first aid measures, bathing of patient and enema, douche and catheterizing procedure cannot be obtained from written instructions. Such basic knowledge as is found in text-books for nurses on the subjects of physiology, anatomy, hygiene, sanitation, surgical cleanliness, and care of contagious diseases are, furthermore, not available to the average housewife, nor is the necessity for such knowledge brought to her mind during her regular school attendance. The attending physician through his directions offers the only scientific instructions available to her and these are necessarily desultory and inadequate.

*Hazards.*—Since the majority of housewives in Richmond are unable to employ a graduate nurse in the event of sickness in the home and as eighty per cent. of the practical nurses refuse to take contagious diseases, the bulk of such work is done by the home nurse. The hazards in such work cannot be definitely stated, since no record is kept of infections. The nervous exhaustion following serious cases is often undoubtedly the cause of later nervous disorders. Undue strain upon the back, through unskilled handling of the patient, is in many cases directly responsible for later weaknesses in the genital organs.

### General Conclusions

#### For Meeting the Gap in the Training of Nurses

It has been noted that there may be a gap of several years between the completion of the high school course and the entrance to the nurse's training school. This points to the need for a pre-vocational course of college grade of about two years in duration. This need is called to the attention of the Board of Trustees of Earlham College. It seems inadvisable for the high school to offer post graduate courses in this field, and as Earlham College has shown herself anxious to assist in the solution of the problems of higher education, the Survey suggests that courses of study in nursing be hereafter included in the regular curriculum of the freshman and sophomore years of that institution. Such courses included in the regular curriculum of Earlham College would undoubtedly appeal to other young women than those specifically interested in it in relation to later training for nursing, and would therefore assist in the solution of the problem of the education of the junior and home nurse. Upon the completion of this two years' course, those who desired to become nurses should enter the training school of the Reid Memorial Hospital.

#### Public Control of Practical Nurses: A Problem for Further Study

As a result of this study it is evident that the whole question of nursing is one of great public concern. The large class of men with families who are getting between twelve and fifteen dollars a week or even less, of which there are over one thousand in Richmond, can ill afford to hire a trained nurse and must necessarily select as inexpensive a nurse as possible. This ordinarily brings them one who is decidedly ignorant of either nursing or sanitation, yet in these very instances there is even more need of knowledge on the part of the nurse than in families where there is already a better standard of living. Poor nutrition and poor sanitary conditions make nursing more difficult in the poorer home. Nor would it seem as if sending the patient to the hospital could be a solution of the difficulty. This means paying the hospital at least seven dollars a week. Visiting nurses who could be paid small amounts for the visits necessary to accomplish the real nursing, with a woman to run the house and act as attendant, might help, but the visiting nurse in these cases ought not to be considered as charity. It should not be necessary for men of this class to be forced to depend upon charity.

The question which looms large as a result of this study and

which needs much further consideration, not as a local but as a universal problem for society, is public control of these nurses. The state has already assumed responsibility in regard to the trained nurse. But since the trained nurse is usually employed by a family with much more intelligence and means to investigate and judge the ability of the nurse, it seems evident that the other family is much more helpless in the proper selection of a practical nurse.

If standards for such nurses could be fixed and enforced, it might be necessary to recognize more than one grade of practical nurse. While it would always be difficult to demand much of the lowest class nurse, at least a class between the trained nurse and the poorer grade nurse might thus be created, which would be composed of well qualified practical nurses. Perhaps the care of health may some day be made wholly a public matter and the poor will then not have to depend on chance or charity for either good doctoring or nursing.

As an immediate measure, there should be some public control in the standardization of the practical nurse. This would perhaps, involve a scheme of registration similar to that of the trained nurse, indicating the proper standards required for the types of nurses.

These problems are called to the attention of the State Board of Health for further study.

#### Registration Bureau

At present there seems to be no better place for registration work than the drug stores. While this service is at present given by two stores without charge, it would seem as if they took great pains to make their services as efficient as possible. However, the list kept is very inaccurate, containing the names of nurses who have not been in the city for many years. One morning twelve calls were made at addresses selected from this list and only two of them proved to be houses at which there was a nurse living. Undoubtedly much of this difficulty is not the fault of the service at the drug stores but is due to the carelessness of nurses who do not withdraw their names from the list or correct their addresses when they move. The doctors report that it is impossible to depend on the list to know whether a nurse is on a case or waiting for work. One nurse who always kept the drug store informed on this point said that nevertheless she had constant calls when *she was already* on a case, probably because it was taken for

granted that the record on this point would be incorrect. This confusion makes it very difficult to obtain a nurse in a hurry for an emergency and must greatly hamper nurses in obtaining calls. Perhaps some responsibility on the part of the nurses for this service would make them realize the necessity for greater accuracy in reporting. In some cities a central registration bureau is maintained by the nurses themselves although this is usually a trained nurses' bureau. It would be impossible for the comparatively small number of nurses in Richmond to pay the full cost of such a bureau.

Since this is really a matter of public interest, it might some time be possible for this service to be taken over by some city bureau. If such a bureau was organized to deal with general employment, this work might be included; but none of the present offices, such as the Social Service Bureau, are open long enough to perform this service, for there is probably as frequent, or more frequent a demand for nurses in the evening as at any other time. The requirements of a small registration fee might more effectively impress on the nurses the importance and the advantage of all concerned of keeping such list accurate. If the nurses had telephone service, all the problems of communication would be simplified.

#### High School Courses

It would seem as if work might be introduced into the high school along lines which would provide girls with the knowledge which is needed both by the practical nurse and the mother who must care for the physical welfare of herself and her family. Such work would also give the background needed by the trained nurse. A so-called nursing course would probably attract many girls. It might stimulate more to enter hospital training and also provide nurses with better educational qualifications. It would certainly help a girl who wished later to become a practical nurse and might even provide her with an immediate vocation. One doctor went as far as to say that this work should be required of every girl in high school; and another, that if such a course was introduced as the result of this Survey, it alone would be worth to the city the cost of making the whole Survey.

Investigation shows that some of this work is already being taught in the high school. In the Domestic Science course we already find such subjects given as cooking, the composition and value of foods in the diet, balanced rations, hygiene, including

simple work in anatomy and personal, home and public sanitation; bacteriology with some description of diseases and emergency measures.

At present all these subjects are taught under the head of "Cooking." The course for nurses would need to include simple laboratory work in bacteriology and a full course in the care and feeding of babies, as well as work in home nursing. Botany, but especially chemistry, both of which are already offered in the high school, should also be included in the course. With a minimum of change such a course might be run as shown below. A more descriptive naming of the course now called Cooking I, II, III and IV would be advantageous.

#### First Year

Cooking I and II.....5 days a week

Two days a week are devoted to laboratory work in cooking.

Two days a week are devoted to recitation and study. Such topics are considered as the classification, manufacture, composition and value of foods in the diet, principles of cooking, the planning and serving of meals and cost of food.

One day a week is given to hygiene. The bones, muscles and organs of the body are studied as well as respiration, digestion, circulation and the nervous system. Emphasis is laid on personal, home and public sanitation. The aim is to establish ideas of cleanliness.

Biology.....5 days a week

#### Second Year

Cooking III and IV.....5 days a week

Two days a week are devoted to cooking. Besides continuing the work of the former class, especial attention is paid to the preservation of food.

Two days a week are devoted to recitation and study. The recitation work includes dietetics and marketing.

One day a week is given to the study of bacteria, yeast and molds. This should include laboratory work with micro-organisms.

Chemistry.....5 days a week.

#### Third Year

First half year.

Course V. Home Management.....5 days a week.

A study of the household budgets, division of the income, accounts, the organization of household work, care and cleaning. Laundry work.

Second half year.

Course VI. Care of Infants and Invalids.....5 days a week.

*Care and feeding of babies.*—Daily routing; regularity; need of sleep; harmfulness of excitement and overhandling. Pacifiers and thumb sucking. Fresh air; baby foods; care of milk and bottles. Intervals of feeding. Weaning and diet of the little child. Infant diseases and their care.

*Home nursing.*—The sick room; its furnishing and care. Making a bed with a patient in it. Giving baths in bed; dressing the patient; giving alcohol rubs; packs and fomentations; different enemas and douches; taking temperature and pulse; bandaging; first aid measures. Keeping charts. Probable recognition of contagious diseases; checking the spread of infection and contagion; use of disinfectants and antiseptics. Home remedies; dangers in use of narcotics and patent medicines and in indiscriminate drugging.

Practical nursing in special conditions; diets in different diseases. Hygiene and feeding of the expectant mother. Maternity nursing after birth of child. Tuberculosis and pneumonia; typhoid and children's diseases.

#### Courses for Practical Nurses

For the immediate amelioration of existing conditions among the practical nurses of the city the Survey suggests to the Board of Education the possibility of offering short unit courses in nursing to the practical nurses already in the field. Of the ten practical nurses interviewed six thought short unit courses given by the local physicians on different phases of nursing would be very beneficial. One practical nurse suggested that such courses be held during the summer and six suggested the early evening as the most convenient hours for them to attend. Two of the physicians thought a series of lectures on short unit courses on specific problems in nursing would be of great value to the practical nurse; three, while thinking the idea good, doubted if the nurses would attend or benefit much by the courses. One physician was opposed to the idea on the basis that the nurses were too independent in their work now. The Survey, in suggesting complementary continuation short unit courses in nursing had in

mind not only the immediate accretion of special knowledge in scientific methods of nursing but also the attitude of open mindedness and a knowledge of up-to-date literature of the profession. Only one of the practical nurses interviewed had any knowledge of current books on nursing and two of professional magazines. A series of six or eight lectures, demonstrations and discussion given by local physicians or graduate nurses on subjects of immediate value to the practical nurse could be given as a short unit course in the subject chosen. A rotating system of short unit courses by which several greatly needed courses of study could be repeated every second or third year in conjunction with new subjects of study, would lend stability as well as variety and breadth of subject for the work of each current year.

Such courses in nursing should be open to all junior and home nurses of the city and the required amount of publicity given them to acquaint the disinterested housewife in the work.

### SURVEY COMMITTEE RECOMMENDATIONS

The General Survey Committee concurs with the suggestions and recommendations included under the study of the occupation of nursing in the city of Richmond. It calls the attention of the State Board of Health to the conditions existing in the occupation of practical nurse and to the suggestions made for legislation and further study in this field.

The Committee recommends for the consideration of the Board of Trustees of Earlham College the inclusion of pre-vocational courses in nursing for the graduates of the secondary schools in the vicinity who wish later to enter Reid Memorial Hospital or other hospital training schools of the state.

The attention of the Board of Education is called to the ignorance and incompetence of the practical, junior and home nurses and recommends the adoption of the suggested course of study in nursing in the regular courses of study of the Senior High School.

It further suggests that steps be taken at once to arrange for a series of short unit complementary vocation courses in nursing to be open to all practical, junior and home nurses of the city.

## CHAPTER XXIII

### HOUSEHOLD EMPLOYMENT: HOUSEHOLD SERVICE

*Scope.*—This study is concerned primarily with workers in private families. Type studies were made on institutional service in Earlham College, the State Insane Hospital and the Reid Memorial Hospital. Statistics were obtained in regard to workers in restaurants and hotels but not studied intensively. The study omits work done only by men, including janitor work, butchering, the work of the steward, the houseman in the private family and the chauffeur.

It is impossible to estimate accurately the number of domestic servants employed in the homes of Richmond. The questionnaires sent out through the school children show that there are sixty people employed in the families represented. Estimating that two-thirds of the Richmond families send children to school, there are ninety so employed in the city. Sixteen employers were visited who employed nineteen people. Twenty-five employees were visited.

There are many women who work by the day as washerwomen and charwomen. The questionnaires show 220 so employed, 162 as laundresses and 58 as sweepers and cleaners. Estimating as above, there are then 330 women so employed in Richmond. It is possible that this estimate is too high from the fact that one day worker usually works in from one to five families in one week.

Table 22 shows the number employed in all forms of household service in and around Richmond.

*Race and nationality.*—Fourteen of the twenty-four maids reporting who are employed in private families were colored; only one was of foreign birth. Most of them come from small towns in Indiana, Kentucky and Ohio. Five were born in Richmond. A large proportion of the day workers are colored.

*Age, social status and previous employment.*—Ten of the domestics reporting were single and sixteen were married. The unmarried domestics range in age from eighteen to forty. Only six of those reporting were under twenty; six more were between twenty and thirty, and eight were thirty or over. Most of them failed



TABLE 22  
OCCUPATIONS AND NUMBER EMPLOYED IN HOUSEHOLD SERVICE

OCCUPATIONS	Institutions		Restaurants and Hotels		Private Families		Total	
	Males	Females	Males	Females	Males	Females	Males	Females
Housekeepers and matrons.....		6		2		25		33
Cooks.....	2	11	13	1		3	15	15
Dishwashers.....			10	2			10	2
Waiters and waitresses.....	2	21	28	3			30	24
Housemaids and general domestics.....		15		14		96		125
Kitchen maids.....		2		1				3
Bakers (not in factories).....		2						2
Janitors and furnace tenders.....	13		3			23	16	23
Butchers.....			1				1	
Stewards.....			1				1	
Second maids.....						3		3
Caterers.....						8		8
Children's maids.....						14		14
Home laundresses.....						183		183
Sweepers and cleaners.....					5	52	5	52
Miscellaneous home workers.....					8	15	8	15
Total	17	57	56	23	13	499	96	599

to specify what previous work they had done. Among the types of work mentioned was serving, house cleaning, nursing, factory work and teaching.

#### Facts Common to All Workers

*Mental, physical and personal characteristics.*—Domestic workers should have executive ability to plan the work efficiently and to “use the head to save the heels.” This was particularly emphasized by the employers for institutions. The maid should also have the ability to keep several things going at once. She should have a good memory in order to know at once where things are kept. A pleasant disposition and ability to work with other people is desirable because the maid does much work with or directly under the supervision of her employer. Ten housewives required honesty; eight specified good health; four specified cleanliness and neatness; five specified interest in work and willingness to work overtime. Other more vague requirements were judgment, mentality, sense, “nice with children,” trustworthiness, orderliness, good nature and conscientiousness. Necessity for strength was emphasized for the women engaged in day work.

*General education required.*—Housewives and institutional managers were unanimous in stating that full time employees need an elementary education to enable them to use cookbooks, telephone books, read notes, write orders for the milkman, sign for packages, make change and check up bills. Half a dozen housewives indicated that a high school education would be desirable. Subordinate workers in institutions could probably do the work without a knowledge of reading and writing.

Housewives employing day workers agree that elementary education is not required but is desirable. One specified that ability to speak English was necessary. Two or three stated that their present workers could not read or write but did the work satisfactorily.

It seems evident that the maids meet the educational requirements. Eleven were eighth grade graduates; six had had some high school work and only four had less than eighth grade education. Of the eleven day workers reporting only four had been in the eighth grade; five had no education beyond the fourth grade; and eight left school at fourteen years of age or under.

*Promotion.*—Workers in homes have practically no chance for

promotion. Eighteen reported definitely no wage increase on the job and no possibility for promotion. The housewives frankly stated that they could not afford to pay any more, no matter how efficient a girl was and her only chance for advancement was to get another job. One stated "girls know what certain families pay regardless of their experience." Five stated that they had raised wages on the basis of increased efficiency and the length of service. One had increased the wage twice in three years. One had given added responsibilities with increased wages.

There seems to be a considerable shifting particularly among the younger workers. One who left school at fifteen was holding her fifth job at eighteen. One twenty-one years old had held five positions at housework and one at factory work. The time on the job varied from one week to nine years. Eleven, or more than half of those reporting, had been on the job less than six months; six had been on the job less than five years; and four more than five years.

The possibility for promotion is less for day workers. Only two housewives thought an increase would be possible. One "would be willing to pay more than \$1.50 per day if the work could turn out more work and do it better." Another states that "if present helper could beat rugs she would be paid more than \$1.50 per day."

In institutions there is a possibility of promotion for the subordinate workers. Kitchen maids may work up to the position of cooks; waitresses may become head waitresses or cooks; maids may become cooks but they have less opportunity to learn on the job than the other workers mentioned. Cooks may become first cooks and from that they may be promoted to housekeepers.

Promotion depends on efficiency, length of service and general intelligence.

*Source and selection of workers.*—The great majority of workers are secured through recommendations. The number of advertisements in the local papers seem to indicate that many are obtained in this way. Housewives complain that their servants stay only long enough to gain a little experience and then get work in institutions. The employers for the institutions do not bear out this statement. Institutions select most of their employees from applicants. They may require recommendations.

*Seasonableness and hours of labor.*—The only kind of domestic service which shows marked seasonal variation is that of the day

worker. The busy time comes in the spring and fall when extra help for house cleaning is in demand.

In private families the working hours are irregular and time off is not always definitely fixed. About one-half of all the persons interviewed made statements in regard to hours of labor. Working hours varied from seven to thirteen a day. The working day begins somewhere between six and eight o'clock in the morning and is not over until after the evening meal. There were seven maids working eight hours or less, there were ten working eleven or twelve hours a day and two working thirteen hours a day. There seems to be no connection between wages and hours of labor, for, of those working from eleven to twelve hours a day, wages ranged from two to seven dollars a week. Day workers in private families work eight or ten hours a day and if hours are shorter, payment is by the hour.

In institutions work begins at six or seven in the morning and lasts until at least seven o'clock in the evening. The actual working time is from eight to ten hours a day. There are two hours free in the afternoon and a regular half day off a week. Sunday afternoon may be free every week, every two weeks, or every month.

With the maid in the private family time off is not so definitely arranged. Fifteen stated that the maid was free on Sunday afternoon and ten had some regular afternoon or evening off during the week. There may be some time off in the afternoon. One employer states "during the week it depends on the work, but the maid has some time off every afternoon. Her evenings are free except when we need her to take care of the boy." Another states: "There is the set time off, generally one night during the week;" another, "overtime work is demanded when there is company or when house cleaning is going on. There is no regular arrangement for a half day off but I let the girl off whenever she wants to go if I can do so without inconvenience to myself."

*Living conditions and social opportunities.*—The question of living conditions and social opportunities applies only to the fifteen per cent. of the domestics who live in the place in which they work. Six employers stated that the maids may entertain in the house, but in only one case is there any place to do so other than the kitchen. One stated that the maid "does not often go out. I do not want her running around nights." Of the employees interviewed, one stated she could entertain company where

she worked. Several mentioned only the social life outside, such as church activities. In one instance the maid is really treated as a member of the family. In seven cases the maid eats with the family when there are no guests. Where more than one worker is employed they furnish company for each other.

Workers in institutions are numerous enough so that some social life is possible. In the three large institutions visited there is a place for the employees to entertain company and meet each other socially.

*Wages.*—Wages for domestic service include board and room and sometimes laundry. Board and room probably amount to \$2.50 a week estimated on a cash basis. The day workers usually receive the noon meal on the day they work.

Of the 34 maids reporting:

- 7 receive \$3.00 per week or under
- 1 receive \$3.50 per week
- 6 receive \$4.00 per week
- 4 receive \$4.25 or \$4.50 per week
- 11 receive \$5.00 per week
- 3 receive \$6.00 per week
- 2 receive \$7.00 per week

Eighteen of the thirty-four maids reporting received less than five dollars per week, eleven received five dollars, and five received more than five dollars per week.

Cooks in private families earn from seven to eight dollars a week. In institutions the opportunities are greater. Men earn from seven to twelve dollars a week and head cooks may earn fifteen dollars a week.

Wages in institutions are estimated on a monthly basis. Maids and waitresses earn from fourteen to sixteen dollars a month. One maid receives twenty-five dollars a month. Head waitresses earn from twenty to twenty-two dollars a month. Housekeepers in institutions earn about thirty-five dollars a month.

Day workers are paid either by the hour or by the day. Of the twenty-four reporting eleven receive \$1.50 per day; thirteen receive less than \$1.50 per day and five receive less than \$1.00 per day. Wages per week cannot be estimated on a daily basis because the day workers are also housewives and work only part of the week. Definite reports could be obtained from only ten workers. Of these, one worked only one day a month; five

worked two days a week or less; three worked four days a week; and two worked five or six days a week. This being the case, wages vary from fifty cents a week to \$7.50 a week.

Summarized wages for the workers on a weekly basis are as follows:

Maids in private families vary from \$2.00 to \$7.00; largest group receives \$5.00.

Maids and waitresses in institutions vary from \$3.50 to \$5.50; largest group receives \$4.00.

Cooks vary from \$7.00 to \$15.00; largest group receives \$8.00.

Day workers vary from \$.50 to \$7.50; largest group receives \$5.00 or over.

The largest group of housekeepers receives \$8.50.

### The Maid in Private Family

*What the worker does.*—The general housemaid works under the direction of her employer. Seven employers stated that they supervised everything. Most employers plan meals and indicate what recipes are to be used in the preparation of food, and do most of the buying. Only three housewives stated that they did not closely supervise the housework. The work itself consists of washing and ironing, sweeping, dusting, cleaning, washing dishes, cooking, serving, baking and helping in the care of children. Where a cook is also employed the maid does none of the cooking. She takes care of the front part of the house, sweeping, cleaning, making beds, etc., serves the meals, answers the doorbell and the telephone and helps in the kitchen when the cook is unusually busy. She may also assist with the mending and plain sewing.

Labor saving devices are in common use in the types of homes in which servants are employed. Nine mentioned the use of electric irons, five mentioned washing machines and eight vacuum cleaners. A very few homes have specially equipped laundries. Families in which the work is done vary in size from two to five persons. Eleven of the sixteen reporting have children in the family under eighteen. Only three of the families visited employed more than one full time worker; one or two more employed a day worker to do the washing and to help with the spring house cleaning.

*Special knowledge required.*—Since so many maids work entirely under supervision, special knowledge needed for beginning is slight. Five employers stated that no special knowledge was

required. This is more likely to be the case in the less well-to-do families with children. Five specified the need for a knowledge of household management and cleaning; six for care of children; five specified dietetics; one planning meals; three serving; two specified mechanical devices used in the household; and two marketing. In a few instances a knowledge of sewing is needed. For maximum efficiency the maid needs the knowledge of the housewife in marketing, keeping the house clean, laundry work, preparing and serving meals, caring for children and in so planning the household work that no time is lost in doing each kind of work or in going from one kind to another.

*Special skill required.*—The skill required in cleaning, consists of using a vacuum cleaner, handling a broom, handling a mop, getting into all the corners, etc. Skill required in cooking consists of mixing the ingredients properly, and knowing how to get the best results from the cook stove.

*How special knowledge and skill are obtained.*—Special knowledge and skill may be obtained on the job. The housewife shows an inexperienced worker how to do the work and helps her do it. Girls learn in two or three months but it takes longer to become really efficient. One employer stated that it took her maid two years to learn how to run the cook stove. Another stated that it was some time before her maid became accustomed to using the vacuum cleaner and still longer to learn to iron. An experienced worker learns the routine in a day or two but it may take a month to learn all the ways of the different households.

### **The Cook in Private Family**

*What the worker does.*—The cook in a private family does the laundry work, keeps the back part of the house clean, and does the baking as well as the cooking. There is usually a laundry fitted with stationary tubs, washing machines, and in one instance, a mangle. The employer supervises the work and usually plans the meals.

In institutions the work is supervised by the housekeeper and the meals are planned by her. The work may be further subdivided into baking and cooking, and less experienced workers are employed as assistant cooks. These assistants work under the direction of the head cook and help in preparing food for cooking and serving in the kitchen.

*Special knowledge required.*—The cooks should know the recipes they use and how the different ingredients should be mixed. This worker should know something of dietetics and chemistry of foods.

*Special skill required.*—The skill required consists in mixing ingredients, baking cake, kneading bread, etc.

*How special knowledge and skill are obtained.*—Special skill and knowledge can be obtained by previous experience as maid, waitress or housewife, by instructions from employer, by using cookbooks and by experience on the job.

### Housemaid in an Institution

*What the worker does.*—The housemaid in an institution cleans, sweeps, makes beds, changes linen and does the general picking up and keeping things in order.

*Special knowledge required.*—The housemaid should know how to clean, sweep, make beds and how to plan her work efficiently.

*Special skill required.*—The special skill required consists in doing the work quickly and neatly.

*How special knowledge and skill are obtained.*—Special knowledge and skill may be obtained on the job by experience.

### Kitchen Maid in Institution

*What the worker does.*—This worker washes dishes, cleans vegetables, helps clean the kitchen and serve in the employees' dining room.

*Special knowledge required.*—The kitchen maid should know how to perform the details of her work and how to plan the work efficiently.

*Special skill required.*—The skill required consists in doing the work thoroughly and quickly.

*How special knowledge and skill are obtained.*—Special knowledge and skill can be obtained on the job in a few weeks.

### SURVEY COMMITTEE RECOMMENDATIONS

Among the factors which make it difficult for the Survey Committee to recommend at present vocational courses for young women wishing to prepare for household and institutional service are: Lack of standards regarding the work to be done and



the knowledge and skill required; the low wage; the long hours; the inadequate provisions for social life; and the lack of opportunity for promotion and increased wages with increased efficiency.

During the course of the Survey, conferences with employers and employed were held with a view of reaching a working agreement about these contributory problems. As yet no workable agreement has been reached.

The Survey Committee earnestly calls the attention of employing women and employed women to this report, with the hope that these problems may be squarely met and solved. When employers and employed reach just decisions regarding standardization of work, wages and hours of labor, and the training required of workers for entrance, efficiency and promotion, the Richmond schools should offer the necessary day courses for those who wish to enter work, and continuation courses for those already in the work.

## CHAPTER XXIV

### JUVENILE EMPLOYMENT

*State wardship over youths.*—The problems growing out of juvenile employment have for years attracted nation-wide consideration. States have drafted compulsory education laws and regulatory measures regarding street trades and factory employment. At present public attention is focused upon various plans for bringing back to the school for further education, for a part of the day or week, the boys and girls who have left the school system and entered productive wage-earning occupations. The tendency of the times is for the state to continue its wardship over its boys and girls under seventeen years of age, whether they are in school or at work.

*Sources of information.*—Three sources of information were available for the study of juvenile employment in Richmond: Records of working permits issued to boys and girls from September 1, 1915, to May 1, 1916; reports made out by all Richmond employers indicating the number of youths under seventeen years of age on the pay roll March 1, 1916; and the school census enumeration taken between April 10 and April 30. In this chapter the data from the first two sources are reported and the data from the third source is contained in Chapter XXV, "Home and School Gardening."

*Number of permits issued.*—From the first of September, 1915, to May 1, 1916, working permits were issued to 79 boys and 69 girls. For thirteen of the boys and five of the girls two permits were issued during this period of time, and for three boys three permits were issued. To all others one permit was issued. Three of the boys to whom permits were issued were colored.

*Place of children's birth.*—The boys and girls to whom permits were issued were born in the following places:

	Boys	Girls
Richmond, Indiana.....	30	27
Indiana, other than Richmond.....	25	23
United States, other than Indiana.....	23	15
Foreign country.....	1	2

The per cent. of foreign born is almost negligible; this being so, Richmond is confronted with the serious problem of such a large

number of native born boys and girls going to work at an early age.

*Schools last attended.*—It will be noted from the tabular statement that the large majority of the permit boys and girls last attended the public schools of Richmond:

	Boys	Girls
Richmond public schools.....	65	48
Richmond parochial schools.....	6	14
Public schools elsewhere.....	8	5

Many of these children reported as last attending the public schools attended the parochial schools for a number of years and were transferred to the public schools a year or two before the permit was issued.

*Age upon leaving school and grade completed.*—As might be expected, the majority of the boys and girls who received permit left school as soon as the law allowed; however, ten boys and nineteen girls left school at thirteen years of age, this being one year before the legal age limit. In these cases the records show that the permits were not issued until children were fourteen years old, meaning a possible period of idleness of one year. Twenty-two boys and eight girls continued in school one year beyond the fourteen year age limit of compulsory school attendance.

**TABLE 23**  
NUMBER OF WORKING PERMIT BOYS AND GIRLS LEAVING AT  
EACH AGE AND SCHOOL GRADE

SCHOOL GRADE COMPLETED	Age Upon Leaving School								Totals	
	13		14		15		16			
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Grade unknown.....	....	2	2	1	2	....	....	....	4	3
5A grade.....	1	1	4	4	1	....	....	....	6	5
6B grade.....	2	2	9	3	3	2	....	....	14	7
6A grade.....	1	4	3	4	5	1	1	....	10	9
7B grade.....	2	5	9	4	1	1	....	....	12	10
7A grade.....	1	4	5	6	....	....	....	....	6	10
8B grade.....	....	1	4	9	4	1	....	....	8	11
8A grade.....	2	....	5	8	3	....	....	....	10	8
1st high.....	1	....	5	1	1	2	....	....	7	3
2nd high.....	....	....	1	....	1	1	....	....	2	1
Total.....	10	19	47	40	21	8	1	....	79	67

Concerning the grade completed before leaving school, almost one-half of the boys and one-half of the girls left before entering the seventh grade. This presents a very serious problem as youthful workers with limited education, stand but a slight chance for success in the modern competitive order. Table 23 records facts of age upon leaving school and school grade completed.

*Why did they leave school?*—It is of the utmost importance to determine why the permit boys and girls left school to go to work. The records of the attendance office are very complete and specific upon this point. From the tabular statement here made it is seen that the majority of the boys and girls had to go to work on account of economic necessity.

	Boys	Girls
Father deceased.....	3	0
Economic necessity.....	42	31
Wanted to work.....	19	15
Did not like school.....	8	5
Other reasons.....	7	16

The other reasons specified for going to work are the following: "Going to Business College later," "can't keep up with studies," "to help father," "to help mother," and "personal sickness." The fact that such a large number of boys and girls had to go to work on account of economic necessity is a further proof of the extremely low wages paid to workingmen in Richmond.

TABLE 24

## OCCUPATIONS OF FATHERS AND MOTHERS OF PERMIT BOYS AND GIRLS

OCCUPATIONS	Permit Boys		Permit Girls		Total	
	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers
Deceased.....	10	3	7	2	17	5
Laborers.....	27	.....	26	.....	53	.....
Skilled mechanics.....	21	.....	12	.....	33	.....
Miscellaneous occupations	13	1	9	5	22	6
Washerwomen.....	.....	6	.....	6	.....	12
At home.....	.....	63	.....	50	.....	113
Unknown.....	8	4	13	1	21	5
Total.....	79	77	67	64	146	141

*Occupations of fathers and mothers.*—Table 24 shows occupations of fathers and mothers of permit boys and girls. It is prising to note that the fathers of twenty-one boys and tv girls are skilled mechanics, presumably not earning enough support the family without the aid of the children.

*Occupational distributions of permit boys and girls.*—Occupations of the boys and girls are divided among four types of ployment: Factory work in manufacturing establishments, employment, office employment and personal service. You workers in Richmond are divided among these types of emment as follows:

	Boys	(
Factory employment.....	39	
Store employment.....	23	
Office employment.....	14	
Personal service.....	3	

*Factory employment of boys and girls.*—The majority of the and girls in factory occupations are employed in the glove industry. Specific lines of employment of all boys and girl listed below:

**Glove Making Occupations**

	Boys	(
Clippers.....	11	
Tip cutters.....	5	
Turners.....	9	
Cutters.....	2	
Bundlers.....	1	
Formers.....	4	
Sewers.....	0	
Inspectors.....	0	
Boxers.....	0	

**Miscellaneous Factory Occupations**

	Boys	(
Helper, cabinet factory.....	1	
Casket trimmer.....	2	
Core maker.....	1	
Foundry helper.....	1	
Florist assistants.....	4	
Helper, newspaper.....	1	

**Miscellaneous Factory Occupations—Continued**

	Boys	Girls
Offbearer, wood machine.....	1	.....
Underwear packer.....		1
Underwear repairer.....		1
Collar pad trimmer.....		1
Dishwasher.....		1

*Wages in factory employment for boys and girls.*—The average wage for both boys and girls in factory employment is \$4.30 per week, derived from thirty-one boys reporting wages and thirty-one girls reporting wages. Weekly wages derived from statements of boys and girls in specific occupations are as follows:

	Boys	Girls
Clipper.....	\$3.00	\$3.00
Tip cutter.....	\$5.00	.....
Cutter.....	\$3.50	.....
Bundler.....	\$4.00	.....
Former.....	\$4.00 to \$7.00	\$2.50 to \$4.75
Turner.....		\$3.00 to \$7.00
Inspector.....		\$3.00 to \$7.00
Casket trimmer.....	\$4.00 to \$6.00	.....
Offbearer.....	\$6.00	.....
Florist's helper.....	\$4.00 to \$5.00	.....
Core maker.....	\$9.00	.....

*Store employment and wages of boys and girls.*—The majority of the boys in the store employment are either errand or delivery boys, and three of the four girls are millinery apprentices.

	Boys	Girls
Errand and delivery.....	15	0
Clerks (salespersons).....	5	1
General store work.....	3	0
Milliner apprentice.....	0	3

*Wages in store employment: Boys and girls.*—The average weekly wage in store employment for boys is \$3.42 derived from nineteen wage reports, and the average wage for girls derived from two wage reports is \$2.50.

Errand and delivery.....	\$2.25 to \$3.00
Clerks (salespersons).....	\$3.00 to \$6.00
Milliner apprentices.....	\$1.00

*Office employment of boys.*—All the boys in office employment

are telegraph messengers, and on the basis of eleven reports on wages, the average weekly wage is five dollars.

*Personal service of boys.*—The three permit boys in personal service pursuits are porters; two in hotels and one in a barber shop. The average weekly wage is three and one-half dollars.

### **Boys and Girls Under Seventeen Years of Age on Pay Rolls, March 1, 1916.**

The data here reported, is in part a duplication of facts reported under the previous section of the Chapter, "Working Permit Boys and Girls." These detailed facts are recorded in this section partly as a check upon the reliability of the working permit data.

*Number employed.*—According to the returns from all employers in Richmond, there were sixty boys and fifty-two girls under seventeen years of age employed for wages in the factories, stores and offices on March 1, 1916. As working permits were issued to seventy-nine boys and sixty-nine girls, all of whom were under sixteen years of age, the reports from employers of labor would seem to indicate that a number of the permit boys and girls must be idle, or have left the city since the issuance of the permit.

*Occupations of boys and girls under seventeen.*—The youthful employees may be grouped under four general heads:

	Boys	Girls
Factory employment.....	30	48
Store employment.....	21	4
Office employment.....	8	0
Personal service.....	1	0

*Factory work of boys and girls.*—The boys and girls were engaged in the following lines of factory employment:

	Boys	Girls
Glove turners.....	8	14
Glove formers.....	4	10
Bread wrappers.....	5	0
Helpers, casket factory.....	4	0
Glove tip cutters.....	4	0
Glove clippers.....	2	0
Greenhouse helper.....	1	0
Harness helper.....	1	0

	Boys	Girls
Glove cutter.....	1	0
Glove and shirt sewers.....	0	9
Glove inspectors.....	0	5
Bread packers.....	0	4
Cake icers.....	0	3
Glove boxers.....	0	2
Bakery helpers.....	0	1

*Store work of boys and girls.*—The boys and girls were engaged in the following lines of store employment:

	Boys	Girls
Delivery and general store work.....	15	0
Bakery and grocery sales.....	6	1
Millinery.....	0	3

*Office work of boys.*—The eight boys were engaged in telegraph messenger service.

*Personal service of boys.*—The one boy reported in personal service was a restaurant waiter.

### Possible Part-Time Complementary Education

*For factory workers.*—After a careful analysis of all the various factory occupations in which thirty-nine boys and sixty-three girls are reported as engaged, it is concluded that education complementary to employment could be provided for:

Florist's assistant.....	1 Boy
Foundry helper.....	1 Boy

This means that no complementary part-time education is necessary for the thirty-seven boys and sixty-three girls, the majority of whom are employed in some glove making occupation.

*For store workers.*—Part-time complementary education could be provided for part of the twenty-three boys and four girls in store employment as follows:

Millinery apprentices.....	4 Girls
Salespersons.....	5 Boys and 1 Girl

*For office employees.*—For the eleven boys in messenger service no complementary part-time education is necessary. All the boys thoroughly know the streets of the city and all necessary facts regarding procedure of delivering messages.



*For personal service employees.*—No part-time complementary education is needed for the three boys employed as porters.

*For all Richmond youths—summarized.*—Part-time education on a complementary basis could be provided for:

7 of the 79 boys to whom permits were issued

6 of the 69 girls to whom permits were issued

The point is not proved, however, that for these thirteen children, complementary education on a part-time basis would be of more profit than education along some line other than that related to the lines in which they are now engaged.

*Comparisons between Richmond and Hammond.*—The study of juvenile employment was made in Hammond one year ago along practically the same lines as this part of the Richmond Survey. A comparison of the permit groups in the two cities for the same gross period of time, although of different years, is as follows:

79 boys and 69 girls received permits in Richmond

67 boys and 89 girls received permits in Hammond

Part-time education on a complementary basis could be provided for the children of the two cities as follows:

7 boys and 6 girls in Richmond

19 boys and 31 girls in Hammond

In view of these studies in Richmond and Hammond, the limitations of the Indiana part-time law are obvious.

### Indiana Part-Time Education Laws

*Part-time class defined.*—"Part-time classes in industrial, agricultural or domestic science school or department, shall mean a vocational class for persons giving a part of their working time to profitable employment and receiving in the **PART-TIME SCHOOL OR DEPARTMENT, INSTRUCTION COMPLEMENTARY TO THE PRACTICAL WORK CARRIED ON IN SUCH EMPLOYMENT. TO GIVE A PART OF THEIR WORKING TIME, SUCH PERSONS MUST GIVE A PART OF EACH DAY, WEEK OR LONGER PERIOD TO SUCH PART-TIME CLASS DURING THE PERIOD IN WHICH IT IS IN SESSION.**"

*Who may attend part-time class.*—"That the arts may go on together, vocational schools and departments for industrial, agricultural and domestic science education may offer instruction in day, part-time and evening classes. Such instruction shall be of

less than college grade and be designed to meet the vocational needs of persons over fourteen years of age who are able to profit by the instruction offered. ATTENDANCE UPON SUCH DAY OR PART-TIME CLASSES SHALL BE RESTRICTED TO PERSONS OVER FOURTEEN AND UNDER TWENTY-FIVE YEARS OF AGE; and upon such evening classes to persons over seventeen years of age."

*Provisions for attendance.*—"IN CASE THE BOARD OF EDUCATION OR TOWNSHIP TRUSTEE OF ANY CITY, TOWN OR TOWNSHIP HAVE ESTABLISHED APPROVED VOCATIONAL SCHOOLS FOR THE INSTRUCTION OF YOUTHS OVER FOURTEEN YEARS OF AGE, WHO ARE ENGAGED IN REGULAR EMPLOYMENT, IN PART-TIME CLASSES, AND HAD FORMERLY ACCEPTED THE PROVISIONS OF THIS SECTION, SUCH BOARD OF TRUSTEES ARE AUTHORIZED TO REQUIRE ALL YOUTHS BETWEEN THE AGES OF FOURTEEN AND SIXTEEN YEARS WHO ARE REGULARLY EMPLOYED, TO ATTEND SCHOOL NOT LESS THAN FIVE HOURS PER WEEK BETWEEN THE HOURS OF 8 A. M. AND 5 P. M. DURING THE SCHOOL TERM."

### Legal Provisions Regarding School Attendance and Juvenile Employment

*Compulsory school attendance.*—All children of the age of seven and not more than fourteen are required to regularly attend a public, private, or parochial day school during each school year for a term not shorter than that of the common school corporation in which the child resides. Exceptions are made for those physically and mentally disqualified. Compulsory attendance is also required of every child of fourteen or more and not more than sixteen years of age who is not regularly employed during the hours of the common school day.

*Issuance of working permits.*—Working permits may be issued to boys and girls who have attained the age of fourteen years, who have procured a certificate from the executive officer of the common school corporation, stating age, date and place of birth, also showing that the child has completed the fifth year grade of the common schools or its equivalent, and has also a written and signed statement from the child's prospective employer showing the place and character of the proposed employment. The employer must keep the working certificate on file, and shall immediately, when his employment of the child ceases, notify the school corporation in writing. It is unlawful for an employer to re-employ the child without a new certificate.

*Restrictions relative to employment.*—No child under the age of fourteen is permitted to work in any gainful occupation other than farm work or domestic service, except that any child between the ages of twelve and fourteen may be employed in preserving and canning fruits and vegetables from June 1st to October 1st of each year.

No child under sixteen shall be permitted to work in any gainful occupation, other than farm work or domestic service, more than forty-eight hours in one week, or more than eight hours in any one day unless written consent of the parent is procured; but in no event shall any child work at a gainful occupation other than farm or domestic service more than fifty-four hours in one week or nine hours in one day.

No child under sixteen years of age shall be permitted to work where tobacco is manufactured or prepared, or in a hotel, theatre, or place where morals may be depraved. No boys under eighteen years of age shall be permitted to work where liquors are prepared or sold, or in match factories, or in manufacturing explosives, or in the case of girls under eighteen years of age, where employment compels constant standing.

No child under sixteen years of age shall be employed to operate circular or band saws, wood shapers, wood jointers, planers, stamping machines, steam boilers, dough brakes or cracker machinery, wire or iron straightening machinery, rolling mill machinery, punch or shears, grinding or mixing mills, calender rolls in rubber manufacturing, or laundry machinery, or corrugated rolls used in roofing or washboard manufacturing.

### SURVEY COMMITTEE RECOMMENDATIONS

That the sections of the Indiana Vocational Law concerning part-time education be amended so:

1. That the establishment of part-time classes be mandatory upon all Boards of Education of cities and towns of 5,000 population and over.

2. That attendance of all boys and girls under eighteen years of age, who have left school and entered any type of profitable employment, be required for at least five hours each week during the regular school year.

3. That in addition to the provisions for part-time education complementary to daily employment, part-time education be also provided through continuation schools for all youthful workers

who are at work in juvenile employment regardless of whether it is complementary to the daily employment.

That the laws relative to child labor and the issuance of working permits be amended so:

1. That working permits are required for all types of employment for all youths under sixteen years of age, including those engaged in farm work, any form of domestic or personal service, or any other employment.



## CHAPTER XXV

### HOME AND SCHOOL GARDENING

(This study was made by Mr. J. L. Randall, Specialist in School or Home Gardening of the United States Bureau of Education, through the courtesy of Dr. P. P. Claxton, Commissioner of Education.)

*Aim and scope.*—The aim of this study is to collect facts and figures on the cost of vegetable foods to city families, the possibilities of raising much of this food in the city and the educational value of garden training to the people, especially the children, of the city of Richmond. From these statistics it is hoped to draw conclusions and to make recommendations for gardening as one unit in a complete plan for vocational education in the city.

#### Wayne County and Richmond

*County and city.*—As the marketing, shipping and industrial center of an agricultural county, the economic relations of city and county are closely interwoven. This is shown from the Transportation Map in Chapter II. According to the 1910 census between ninety and ninety-five per cent. of the land area of Wayne County is in farms. The average value of this land is from fifty to seventy-five dollars per acre (this value has increased very rapidly in the last five years). The State of Indiana is divided into seven divisions, according to land values, and Wayne County is placed in the fourth division. In comparison with the other ninety-one counties, Wayne stands thirty-fourth in the value of farm property, twelfth in population, twenty-fourth in the production of potatoes and forty-fourth in the production of other vegetables. A comparison of amounts and values of the agricultural products of the county demonstrates that the majority of the farmers are engaged in general farming. Near the city there are a few specialized farms growing vegetables and berries for the city market, but the small number prevents over-supply and consequent low prices even in the periods of marketing short season crops.

#### The City of Richmond

*Growth of the city.*—The growth of the city has been gradual. At no one time does there seem to have been a rapid increase in population with consequent high lot values. In topography the

land both in and near the corporate limits of the city is level, which, with low values per front foot, has reacted in the laying out of comparatively large building lots. The size of the lots ranges from 40 by 160 feet to 70 by 165 feet, and many home grounds are much larger. Lots completely covered or nearly covered by buildings are only to be found where the back part of corner lots have been sold for the building of houses facing on cross streets. A large part of the families live in single houses. The 1910 census shows that there were 5,533 dwellings for the accommodation of 5,874 families, or only 341 cases of families living in apartment



A Row of Substantial Residences Which Perennials Would Beautify.

houses or with other families. In the last five years the number of families has increased to 6,607; and from the number of building permits issued, dwellings seem to have increased at about the same rate as has the number of families, but a larger percentage of flats has been erected. The figures on dwellings and families correspond very well with the estimated growth in population of between two and three thousand over 22,324, as given in the 1910 census.

*Architectural styles.*—The architecture of the homes is, in the

main, very plain. With the exception of two small sections, straight line building has been the rule. In the older and better parts of the city this has resulted in rather substantial-looking homes, placed on an average of thirty-five feet from the curb, thus leaving a good space for lawns, which in most cases, are well kept. Many shade trees have been planted, but little attention has been given to breaking the box-like lines of the older square house without a porch or the more modern house by the planting of vines and shrubbery. In several sections of the city well landscaped homes are to be found and the additional attractiveness of the streets is well illustrated.



Residences are Made More Attractive by Proper Landscape Gardening.

*Production and distribution of garden products.*—In any consideration of the economic value which the home garden may have to city families, the place of production, methods of purchase and cost of vegetables and small fruits must be studied. Question blanks were filled out by eleven grocers and fifty-eight housewives. The grocers' reports are summarized as follows: Sixty-five per cent. of the fresh vegetables sold through their stores during the year are secured from farmers, and thirty-five per cent.



through commission houses. In the total sale of vegetables to the people of the city the grocers sell from seventy to seventy-five per cent.; the farmers' market twenty to twenty-five per cent.; and the hucksters five to ten per cent. The cost of fresh and canned vegetables to a family of five persons is estimated by the storekeepers at between twenty-five and forty cents per day, or a total cost of from \$91.25 to \$146.00 per year. The grocers were unanimous in stating that the consumption of canned vegetables had increased very rapidly during the last few years, and, on the average, estimated that from forty to fifty per cent. of all vegetable foods used in the city are now purchased in cans. One store proprietor illustrated this increase by stating that seven years ago a saleswoman for a prominent brand of canned goods spent two weeks in selling between two and three hundred dollars' worth to housewives, whereas, in the same length of time this year, she disposed of between three and four thousand dollars' worth.

Forty-seven housewives reported that sixty-eight per cent. of the vegetables purchased for use in their homes came from the grocery store, twenty-four per cent. from the farmers' market, and eight per cent. from the huckster. Reports received from fifty families with a total of two hundred and thirty individuals give the daily cost of fresh vegetables as four and six-tenths cents a day per person or a total of \$83.95 for a family of five for one year. The amount expended for canned vegetables as given by the housekeepers is much lower than the grocers' estimate and exactly half of that spent for fresh vegetables. The daily cost per individual was found to be two and three-tenths cents or a yearly cost of forty-one dollars and ninety-seven and one-half cents for five people.

The figures on small fruits (including strawberries) as received from grocers and housewives are much less definite. They agree, however, in stating that from seventy-five to eighty per cent. of the year's sale of berries is sold to the consumer through the grocery stores; that fully ninety per cent. of the berries used are purchased during the ten weeks to three months that local berries are on the market, and that the amount of canned berries consumed in the average home is small. During the ten weeks that local berries are on the market, forty-six housekeepers, representing families containing 209 persons, report a daily average cost of three and seven-tenths cents per person. The total cost for family of five for 70 days would be \$12.95. Taking the housewives' figures as a basis, a family of five persons spend on =

average of \$138.87½ per year for canned and fresh vegetables and fresh berries. The canning of fruits and vegetables in the home has decreased, not over five to ten per cent. of the amount consumed is home canned.

The price of vegetables and small fruit foods to the city family depends largely on the competition between grocers. From the standpoint for which it was intended, the farmers' market seems to be largely a failure, as on the one hand the city purchasers claim that prices are not less than at the stores, and, on the other, a large number of farmers consider it more profitable to sell the produce all at once and spend the extra time in farm work. City ordinances permit the selling of farm produce to the homes without a huckstering license, but, again, the element of the value of the farmer's time enters and very few take advantage of this method of selling.

*Cultivation and irrigation.*—The soil in the city back yards and vacant lots is almost without exception well adapted to vegetable gardening. There are a few well filled lots, but the number is exceedingly small. In most seasons the rainfall is sufficient for the maturing of crops if the water is conserved by cultivation. During extremely dry spells, back yard gardens may be watered without extra cost, as the city water company makes its charge per front foot without regard to the depth of the lot. In the case of vacant lot gardens there would be an extra cost for the use of water. That climatic and soil conditions are well adapted to gardening is well shown by the large production of the gardens where intensive methods of planting and cultivation are practiced.

### Garden Promotion of Recent Years

*Charity organizations and schools.*—Several organizations have fostered family gardening, and two of the elementary schools have conducted school gardens. The high school classes in botany purchase seeds through the school, and the students are encouraged to make home gardens. Previous to the last garden season, one social workers' club, or committee of such club, was instrumental in obtaining vacant lots for the use of families who wished to conduct gardens. A few volunteer workers gave freely of their time, and good results were accomplished. Last season, this work was conducted by the Central Bureau of Charities. In all, forty-six applications for garden land were received, and gardens were found for twenty-two families. No accurate record of the productive

result of these gardens was kept, but considering the limited time that could be given to the supervision of the work by the secretary of the Central Bureau, it was considered a success. So far as can be learned, gardening for its economical results or educational value, has not become the duty of the workers under any

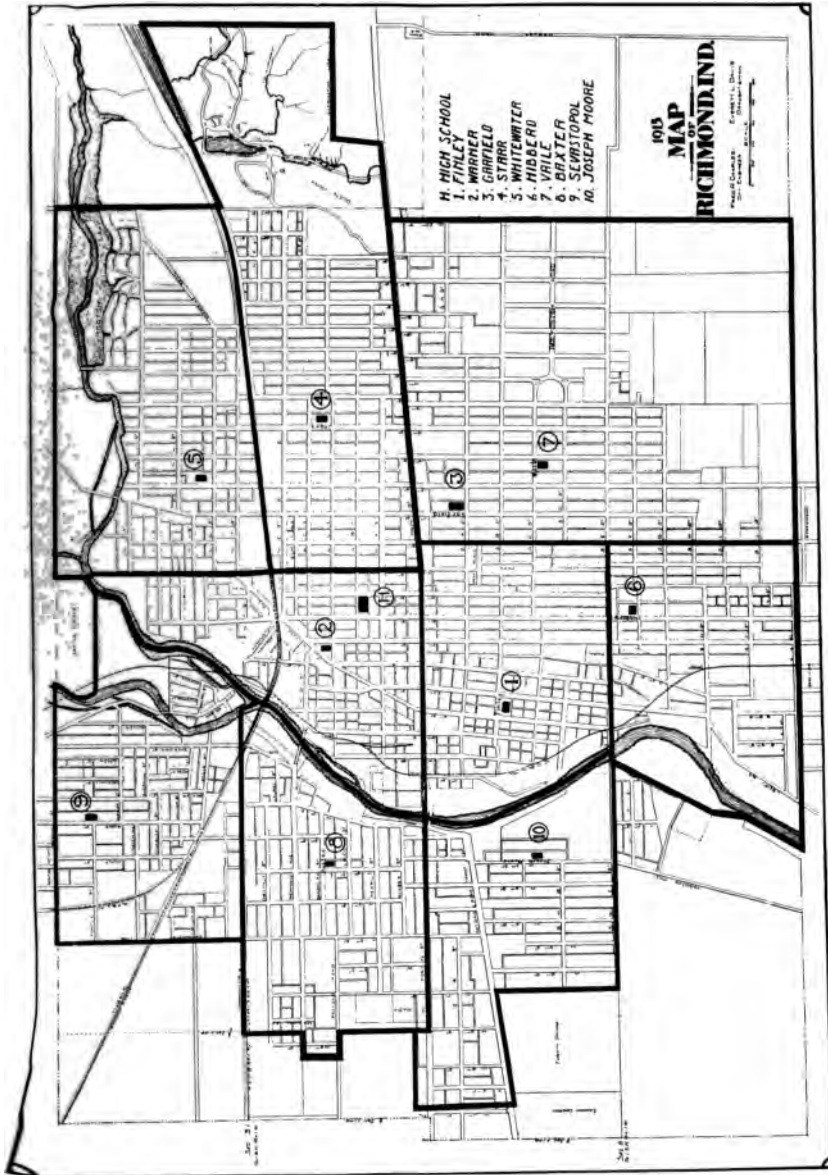


A Successful Home Garden in Richmond.

permanent organization, such as the School Board or Central Bureau of Charities. While no attempt should be made to detract from the value of what has been done, the work has lacked definiteness since it has not been on a sound financial basis, and under the direction of trained and practical garden leaders.

### The Ten Elementary Schools

The elementary school districts form convenient divisions for the study of conditions in different parts of the city. In the main, these districts are remarkably uniform in size when it is considered that the boundaries are marked by the principal business streets, the railroad lines and the Whitewater river. In the character of homes, the size of lots, and the living conditions of the people, there are marked variations which merit separate discussion for each district and school.



**TABLE 25**  
**VACANT LOT AND BACK YARD GARDEN SPACE IN FIVE DISTRICTS**

SCHOOL DISTRICTS	Number of Houses	Little or no Garden Space	400 Sq. Ft.	1,000 Sq. Ft. or Over	Vacant Lots
Finley— 10 blocks.....	214	26	62	126	2
Warner— 10 blocks.....	190	14	93	83	1
Starr— All houses.....	1,198	137	358	703	67
Whitewater— 10 blocks.....	155	11	37	107	71
Hibberd— 10 blocks.....	177	15	39	123	16
Total.....	1,934	203	589	1,142	157

*Finley district.*—The Finley school district includes a part of the oldest and most closely built section of the city. The houses are built on smaller lots than is common in other districts. Seventy per cent. of the people rent their homes, and some of the home grounds are not well cared for. In other homes, well-kept lawns are to be found, and in these homes every square foot of back yard space is often used for the cultivation of a kitchen garden. About twelve per cent. of the back yards are too small for the production of enough vegetables for the families but large vacant areas are to be found short distances away. An examination of ten blocks, containing 214 houses, was made, and gave the following result: 26 had no garden space; 62, between 400 and 1,000 square feet; and 126, more than 1,000 square feet. There were two vacant lots in the ten blocks.

The Finley school had an enrollment of 250 pupils at the beginning of the school year, 122 of whom were in the upper three grades. Ninety-nine children made reports, of which number five had vacation work; six, irregular gainful occupation; three were engaged in gainful after school employment; and twenty-two helped with home work and the care of a garden or chickens. Lack of garden space was reported by fourteen children, while the other eighty-five had an average of 1,051 square feet each.

*Warner district.*—The Warner school district gives a first impression of being very closely built. The building line is near the street, however, and an examination of the back yards reveals more space than would be expected in a district bordering the railroads, factories and river. Ten blocks containing 190 houses were examined, with the following results: 14 had no garden space; 93, between 400 and 1,000 square feet; and 83, over 1,000 square feet. At twenty-one of the homes some vegetables were grown last season.

The Warner school enrollment in September was 295, with 146 pupils in the 4th, 5th and 6th grades. Of 111 children reporting on the number of square feet of garden space in the back yard, 14 state that they have no space; 59, an average of 400 square feet; and 38, more than 1,000 square feet. For the 111 children there is an average of 1,000 square feet each. Fifteen children worked during the vacation, three had irregular employment, and the three who have regular work after school hours earn an average of \$1.17 per week. The figures on summer vacation earnings were not complete, but, when given, the amounts were small.

*Starr district.*—The Starr school district includes a large area of the oldest residential section of the city, and, judging from the school enrollment, it has the largest population. The lots, on the whole, are large in size, although there are many large homes and double houses which cover much ground. A very complete study of back yard garden space was made in this district. The ground available in every home was measured by the aid of the insurance map of the city and these measurements verified by visits to some of the homes. Of the 1,198 lots that were examined, 137 had little garden space, 358 had from 400 to 1,000 square feet, 703 had 1,000 or more square feet, and there were 67 vacant lots in the district.

The Starr school had an enrollment at the beginning of the school year of 460 pupils. Two hundred and twenty-five of these children were in the three upper grades. Question forms were made out by 216 children, of whom twenty had regular vacation work, fourteen worked after school, and eight had employment for a part of the time during the summer. Twenty-seven children either had a garden of their own or helped with the family garden. Of the 205 children who reported the amount of land in back yards which could be used for gardening, fourteen had little or no space, ninety-eight had an average of 400 square feet, and ninety-three had more than 1,000 square feet. The average space for each of the 205 children was 1,139 square feet.

*Whitewater district.*—The Whitewater school district, located on the northeast section of the city, while slightly irregular in shape, is approximately ten blocks east and west by five north and south. A large number of the houses are rented and the lack of pride, which comes with ownership, is evidenced by the unkept lawns and dilapidated outbuildings which line the alleys as regularly as do the houses the streets. Few of the houses have bath rooms or sewer-connected toilets, and the condition of back lots, out-houses, and alleys, would indicate that the city health ordinances are not being obeyed. A few of the homes are as well kept as in other parts of the city. The lots are larger than it is common to find in sections of eastern cities where the houses are built for rent. A study of the back yards of 155 homes of ten blocks in the most congested part of the district was made with the following result: 11 had little or no space for gardening, 37 had between 400 and 1,000 square feet, 107 had 1,000 square feet or more, and there were 71 vacant lots all of which space might be used in gardening.

In the Whitewater school 285 pupils were enrolled at the beginning of the present school year, 98 of whom were in the fourth, fifth and sixth grades. Ninety-five of these upper grade children, aided by teachers and parents, filled out questionnaires from which the following figures were obtained: 78 children had no definite employment during the summer vacation, 11 worked throughout the summer, the other six had irregular work. Twenty-two out of 66 children reported that their homes are rented. In only three of the 95 back yards is there lack of garden space, 37 have an average of 400 square feet, and 55 have more than 1,000 square feet. The total number of square feet given by the ninety-five reports is 458,135, or an average of 4,822 square feet per child.

A successful school garden has been conducted at the Whitewater school for the past three years. The garden is not continued during the vacation, but only crops maturing before the close of school are planted. The value of the crop for the spring of 1914 was: Onions, \$25.60; radishes, \$72.05; and lettuce, \$29.70.

*Hibberd district.*—The Hibberd school district is on the south-central edge of the city; to the south and east there is much vacant land laid out in city lots and farm land. Some of this land seems to be little used, and might well be turned into family garden tracts. There are also many scattered vacant lots, some of which give evidence of having been cultivated last season. A large number of back yards are under cultivation, and the economical use of the home grounds give evidence of the thrift of the people. One hundred and seventy-seven homes were examined in the most closely built section of the district, with the following results: 15 had little or no lot space adapted to gardening; 39 had from 400 to 1,000 square feet; and 123 had 1,000 square feet, or more.

The Hibberd school enrolled 295 children in September, 112 of whom were in the fourth, fifth and sixth grades. Reports received from 103 children give the following figures: Ten had regular vacation work, four worked a part of the time, five worked after school, and thirty-seven owned a garden or helped with the family garden. The total value of garden products as given by thirteen children was \$193, or an average of \$14.85 each, while twelve who worked in stores, or sold papers, etc., earned a total of \$142.30, an average of \$11.86 each. Available home garden space was given by eighty-eight children as follows: One, no space; forty-three, less than 1,000 square feet; and forty-four,



more than 1,000 square feet. The average garden space per child was 5,730 square feet.

*Vaile district.*—The Vaile school district is the largest in area in the city. Only a few homes have been built in the south eastern section which constitutes about one-third of the whole district. The house lots are large and the lawns well kept. Many of the back yards are in sod and comparatively few vegetable gardens are to be found. Just at the south of the district new lot plans have been laid out and there is much unused vacant space that might be used for gardening.

The Vaile school had 280 pupils enrolled at the beginning of school in the fall. One hundred thirty-seven pupils were in the upper three grades. Questionnaires were signed by 135 pupils but in many cases the information was incomplete, and a few parents (the only cases in the elementary schools) objected to giving the information sought. Only two pupils report regular vacation work, and five earned money a part of the time. In reply to questions on land available for gardening, many answered that they did not have any space, as back yards that were in sod were not considered available. Of sixty-four children who gave the amount of land that might be used three lived in houses without lots; thirty-six had from 400 to 1,000 square feet; and twenty-five over 1,000 square feet. The average number of square feet per child was 2,510.

*Baxter district.*—The Baxter school district is in the central section on the west side of the city. The large vacant tracts and farm lands are therefore all to the west. Near the end of the two bridges leading to the business part of the city most of the building lots are occupied by houses. These lots are all large, and practically all of the homes have available garden space in the back yards.

The Baxter school attendance in September was 285, with 147 enrolled in the three upper grades. One hundred and thirty-three reported on vacation employment as follows: Nine had definite work, ten part-time employment, and six after school employment. Six of the children who had their own garden made an average profit of ten dollars. One hundred and ten children measured the available garden space at home: One had no land for gardening, fifty-four had less than 1,000 square feet and fifty-five had a larger amount. The average number of square feet per child was 1,617.

*Sevastopol district.*—The Sevastopol school district, on the northwest corner of the city, is joined on two sides by open farming land, and there are large tracts in the district which are vacant. About forty per cent. of the homes have gardens and a few vacant tracts are used for cultivation. Many single lots are unused, all of which are large enough for a family garden, if intensive garden methods were used. A detailed examination of available garden land in any section of this district was deemed unnecessary, as without question there is enough space available for all who wish to use their own lot or to obtain the use of vacant areas.

The Sevastopol school enrolled 235 children at the commencement of the school year. One hundred and one pupils were in the three upper grades. Several other children have entered since that time, as questionnaires were filled out by one hundred and four children. Sixteen children report definite work from which money is earned during the summer vacation; nine irregular employment; and eight have after school employment. Gardens are owned by six of the pupils, and eight others help with the family garden. Space available for gardening on the home lot was reported as follows: Two, no land; seventeen, 400 to 1,000 square feet; and sixty-four, 1,000 square feet, or more. Eighty-five children had an average of 4,116 square feet each.

*Joseph Moore district.*—The Joseph Moore school district, considering its area, has the smallest population of any district of the city. With few exceptions, the building lots are large, and there are many vacant tracts of land. An examination of the plat map of the city clearly demonstrated that it was unnecessary to make a detailed study of land available for home and vacant lot gardening. Back yard gardens are to be found at many of the homes, and vacant tracts show evidence of having been cultivated last season. The area used for the production of food for the homes of this community could easily be more than doubled.

The Joseph Moore school might well be called a city school in a rural district. The city limit is reached at the south edge of the school grounds, and from that point the land is all in farms, several of which extend into the corporation. The total enrollment of children in the school at the beginning of the school year was 105, of which number thirty-five were in the three upper grades. Reports received from thirty-four of the children demonstrates that some garden activities and work on near-by farms furnished more employment for older children than is to be found in other parts of the city. Twenty-eight of the children claim

---

some vacation occupation, although in the case of twenty-two the work was indefinite and irregular. The six boys who report regular work earned an average of \$24 each.

Less than 1,000 square feet of garden space in the home lot is reported in only four cases. Thirty-two of the children have an average of 2,873 feet per child, and of the other two, one has four and the other seventeen and one-half acres.

*The Garfield school.*—All of the pupils of the seventh and eighth grades of the city are enrolled in the Garfield school. Coming from all parts of the city, the reports on garden space by these pupils serve as a cross-check on those received from the elementary schools. Five hundred and ninety pupils were enrolled when school opened in September, of which number information in regard to the out-of-school activities and home garden space was given by 271 boys and 245 girls. One hundred and twenty-six boys worked during the summer vacation selling papers, in stores, and similar occupations; sixty-one are employed after school hours or on Saturday, and thirty-six helped at home with the care of a garden or chickens. The average income from the boys having regular occupations was \$36.85. Only four of the girls were employed outside of the home, and eleven helped with home gardens.

A survey of the before and after school occupations of the pupils of this school was made by the principal a short time ago, which gave results as follows: Of 297 boys, thirty-four worked before school, 142 had home duties; after school sixty-nine worked and one hundred and forty-seven had home duties; of 257 girls, none worked before school, 111 had home duties, and thirty-six had special lessons; after school, four worked, 172 had home duties, and 111 had special lessons or worked on school subjects. A special record was also made of the desire of the parents and children in regard to the home work of the pupils, as follows: Of the parents, 163 favored having the children employed, 128 opposed, and 164 were indifferent; of the children, 309 favored having employment, 133 opposed, and 112 were indifferent.

Reports on home garden space were made by all of the children as follows: Forty-five little or no space; 206, an average of 40 square feet, and 265, more than 1,000 square feet.

*The high school.*—No attempt was made to make a complete study of the gardening activities and summer occupations of high school students. Questionnaires were distributed to the freshmen

botany class and to those who took botany last year. Sixty-two blanks were returned by the members of the present class but the number received from the previous class was too small on which to base conclusions in regard to the number of gardens cultivated as a result of the sale of seeds and class instruction. Of the sixty-two reports that were tabulated, five students owned gardens, ten helped with family gardens, and a total of thirty-eight families had a vegetable garden. Sixteen pupils had regular vacation work from which money was earned; seven part-time work; and thirty-eight claimed some regular home duties. Three of the students had little or no space for a home garden, thirty-eight had less than 1,000 square feet, and twenty-one had over 1,000 square feet. The average space that could be used for a garden by each pupil was 1,825 square feet.

About seventy students from farm homes near the city are enrolled in the Richmond high school each year. In the course of study of the school no provision has been made for the teaching of subjects that have a special bearing on country life.

*Country school children.*—In order to make a comparison of the out-of-school duties of city and country children, a half day was spent with the county superintendent of schools, visiting schools in the country districts. The early closing of the schools of the county prevented making this part of the study as extensive as was desired.

Two schools were visited, one a typical two-room country school building to which all the children came from farm homes, and the other an eight-room village school, but in the latter all children not living on farms were excluded. The same questions used in the Richmond schools were asked, and answers recorded from 112 pupils. Of these, 103 had definite home duties for which they were responsible each day; 16 had their own farm projects of which they kept a record, and had any profit which might be made; and 3 worked outside the home to earn money.

*Juvenile court records and truancy.*—A careful study was made of the Juvenile court records since the beginning of such records in September 1907. Of two hundred and two cases given, the place from which the children were brought follows: 185 were from Richmond, six from Cambridge City, four from Hagerstown, three from Greensfork, two from Fountain City, one from Boston and one from Wayne township. In forty-five of the cases the children were from babyhood to six years of age; 24 were between

the ages of seven and nine, inclusive; 113, between ten and fourteen; and twenty-nine, sixteen years of age or over. Of the cases that were between birth and the ninth year, the cause of appearance in court rested largely with the parents; between ten and fourteen, mischief was the principal complaint; and in the case of the older children, mischief and sex immorality were the leading causes.

Complete records of truancy were obtainable only for the 1914-15 school year. The office of the truant officer for the city was separated from the county during the present school year and records were not yet compiled. The distribution of the truancy cases for 1914-15 was as follows: Richmond, 461; Cambridge City, Hagerstown, Fountain City and Boston, six; and from farms, five.

*Children leaving school to work.*—The records of working permits and employers' reports show that there were seventy-nine boys and sixty-nine girls under seventeen years of age employed in Richmond on March 1, 1916. Eleven of these children left school while in the fifth grade; forty in the sixth; thirty-eight in the seventh; thirty-seven in the eighth; ten in the first year of the high school and three in the second high school year. The following reasons were given for leaving school: Seventy-six, economic necessity; thirty-four wanted to work; thirteen did not like school; and twenty-three for varying reasons. For a more complete discussion see Chapter XXIV, "Juvenile Employment." The fact that twenty-nine of the children left school before the age at which they could be employed under the state law, seems to indicate that they gave up their studies because the school subjects had ceased to be of interest to them, or that they had failed to receive promotion. The majority of those holding working permits attended Indiana schools, fifty-seven were born in Richmond, forty-eight in other parts of the state, thirty-eight in other states, and three are of foreign birth. One hundred thirteen of the children attended the Richmond public schools; twenty, Richmond parochial schools; and thirteen came to the city from schools elsewhere.

*Industrial conditions and charity.*—During the last three years several of the larger manufacturers of the city have either moved to other places or discontinued business. The resulting shortage of work caused financial stress in a large number of families. The Central Bureau of Charities was called to aid 784 family units

last year. This number is, however, about double that receiving help during normal times. Some of those who were out of work moved to other cities, and a few secured places as farm laborers or became tenant farmers.

During the panics of 1893-1897, when there was a shortage of work all over the country, a large number of Richmond people were unable to find work, and in order to provide the necessities of life obtained work on farms. Young men who had come to the city from farm homes, returned, and others became farm laborers and tenants. The return of prosperity and resumption of business brought only a small part of these people back to the city, and many are now prosperous farmers of Wayne County.



A Poorly Kept Alley.

*City beauty and civic pride.*—There are many expensive homes in the city of Richmond, but, with few exceptions, they lack completeness because of the absence of vines and shrubbery. A large number of homes were examined to determine what had been done in the way of planting perennials to decorate the houses; about ten per cent. of the houses were well planted, forty per cent. had a few shrubs and vines, and fifty per cent. had no planting.

When the trees are in leaf this defect is somewhat covered by the many street shade trees and by well-kept lawns. The prevailing type of architecture particularly needs additional adornment. The most common shrubs now used in the landscaping of the homes are lilacs, syringas, and spireas. In many places there are ungraceful bushes with small tufts of green at the tops due to a lack of intelligent care. The advantage coming from the use of evergreen shrubs, under Richmond climatic conditions, does not seem to be appreciated. A knowledge of home beautification on the part of the people might easily double the city's beauty and increase property values. The statement of one Richmond real estate dealer on this point should be convincing. He says, "A home with a well decorated exterior is half sold."



A Well Kept Richmond Alley. This is a Credit to the City.

The plan of laying out as many alleys as streets has both advantages and disadvantages. In these alleys are buildings of all sizes, colors and conditions of repair. The presence of the alley offers the excuse and easily leads to the habit of dumping everything which is not needed in the house or yard over the back fence. In some sections of the city, the alleys are a dis-

grace to the town and a menace to public health, while in others they are well kept.

Glen Miller Park is a credit to the city, but its location is such that people of the central and western part of the city do not visit it often on account of the great distance. The central landscape feature of the city seems to have been overlooked entirely. The Whitewater river valley holds great scenic possibilities and has the advantage of being located where it can be seen each day by many residents and all strangers who visit the city.

### Summary of Findings and Conclusions

*Homes.*—Although located in the center of a farming region, the prices paid for vegetables are comparatively high. Prices are standardized by present methods of selling. Considering the low average labor income, the amount spent for vegetable foods is large. About thirty per cent. of the families have home or vacant lot vegetable gardens, but the methods of planting and cultivation are not intensive, and the money value of the product is small. Of all the homes in the city, less than ten per cent. lack space on which to make a practical kitchen garden as shown by Table 25; thirty per cent. have enough land to produce all the vegetables for the family during the productive season of the garden; and sixty per cent. have an area large enough to produce fresh and canned vegetables and berries for the entire year, and, in many cases, they have a surplus to sell. There is enough vacant ground so that all of those who are without land could secure enough for a family garden. Vacant lots can be rented for one dollar each but are usually secured free of charge. When remuneration is necessary the amount is so small that it would have little effect in decreasing the profits.

*Schools.*—The school year in Richmond is nine months in length and the school day five hours. The children are out of school nearly half of the week days of the entire year, and three-fourths of the days of the garden season. On school days, less than half of the daylight hours are spent in the class room. All of the children of the city might have occupations two hours per day on school days and four on Saturdays, holidays and in the summer vacation, and yet have enough time left for play, reading, music, and other special studies. At the present time only 9.1 per cent. of the elementary school children as shown by Table 26 have regular productive occupation during vacation; 7 per cent.,



TABLE 26  
OCCUPATION OF ELEMENTARY SCHOOL CHILDREN DURING VACATION AND AFTER SCHOOL

SCHOOL DISTRICTS	Vacation				After School
	Number of Children	Helped with the Home Garden	Have Regular Employment	Have Irregular Employment	Have Regular Employment
Finley.....	99	31	5	6	3
Warner.....	111	11	15	3	3
Start.....	216	27	20	8	14
Whitewater.....	95	12	11	6	6
Hibberd.....	103	37	10	4	5
Vaile.....	135	12	2	5	0
Baxter.....	133	6	9	10	6
Sevastopol.....	104	14	16	9	8
Joseph Moore.....	34	11	6	22	0
Total.....	1,030	161	94	73	45

regular employment; and 4.4 per cent. work after school hours. Of the Garfield school, nineteen per cent. are engaged in earning money before and after school, and twenty-five per cent. during the vacation. Of the high school students reporting, only one-fourth have vacation occupation.

Of 889 children in the elementary schools reporting on home garden space, six per cent. were without home lots, thirty-nine per cent. had an average of 400 square feet, and fifty-five per cent. had 1,000 or more square feet, as shown by Table 27.

In several cities where home gardening has been conducted under the direction of the public schools, the children have been able to produce a net profit of ten cents per square foot. The children of the ten elementary schools of Richmond should be able, on the basis of the number of square feet reported as shown in Table 27, to earn from their gardens a total of \$62,820 or an average per child of \$70.66. The home garden income from the 86 reporting from the Garfield school would be \$34,740, or an average per child of \$67.32.

In some cases the same land has been reported on by two children of the same family, one attending the elementary schools and the other the Garfield school. These cases will, however, be offset by the large vacant tracts of which no account has been made, and while the figures may seem large there is little doubt that each public school child of an age sufficient to care for a garden may produce enough to reduce the cost of vegetables in his home to half the present cost.

A comparatively large number of children leave school each year, some because they need to earn money toward the support of the home, and others because school subjects do not interest them. The earnings of these children are small and the earning powers might be much increased if a more complete education were received. The number of cases of juvenile delinquency and truancy is very much greater in the city than in the country. With each industrial depression city families turn to the country to seek a means of livelihood. Agricultural instruction is not given in the schools and thus the younger pupils do not become interested in the subject; older students are unable to pursue the subject educationally, and those who, from financial necessity, seek the country have a small earning capacity and are unable to adapt themselves to country life.

The beauty of the city might be much increased if the citizens

TABLE 27  
AVAILABLE HOME GARDEN SPACE REPORTED BY THE ELEMENTARY SCHOOL CHILDREN

SCHOOL DISTRICTS	Number of Children	Little or No Space	Average of 400 Sq. Ft.	1,000 Sq. Ft. or Over.	Value of Garden Produce at 10 Cts. per Sq. Ft.
Finley.....	99	14	0	85	\$8,500.00
Warner.....	111	14	59	38	6,160.00
Starr.....	205	14	98	93	13,220.00
Whitewater.....	95	3	37	55	6,980.00
Hibberd.....	88	1	43	44	6,120.00
Vaile.....	64	3	36	25	3,940.00
Baxter.....	110	1	54	55	7,660.00
Sevastopol.....	83	2	17	64	7,080.00
Joseph Moore.....	34	0	4	30	3,160.00
Total.....	889	52	348	489	\$62,820.00

were familiar with the methods of cultivation and the care of decorative plants.

*Value of garden training in Richmond.*—A thorough and practical garden training would have great economic and educational value to all of the people of the city. To make the most successful gardens knowledge and skill are necessary. Profitable gardening may result from years of experience, but the quickest and greatest returns in money and pleasure can be obtained only when experience is combined with scientific study of soil, climate, and crop production. Many people born in the city have little or no knowledge of making practical home gardens, and even those who have lived on farms have little experience in the kind of intensive gardening adapted to the city. The schools are established for the education of all the people and therefore are the logical centers for garden teaching. Through them such teaching may be given more economically and permanently than through any other agency.

The economical and educational value of garden education as a department of the public educational system of the city should reach all of the people. While the garden teachers would devote their attention primarily to the children, they should also act as a source of information and help to all who are interested in gardening. The following advantages should result from the establishment of such a department:

A thousand children might be employed in healthful and gainful occupation during the out-of-school hours.

All of the unused land and unproductive time of the children might be used to contribute to the wealth of the home and community.

Many children will be able to remain in school longer by contributing to the income of the home.

From regular work the children would form regular habits of industry and learn the value of money.

Many of the children are in the psychological period at which gardening is nominally play-work, and under the right system of teaching it will not become burdensome to any.

Garden teaching affords the best kind of nature study teaching.

General school subjects will be vitalized by correlation with gardening and children who have lost interest in learning for learning's sake will renew interest by having the schools take up a subject in which it is possible to learn and earn through doing.

Real interest in school work prevents truancy.

By having regular occupation the pupils will be saved from evils caused by idleness and are less liable to commit Juvenile Court offenses.

Back yards and vacant lots would be cleared and cleaned and home environments improved.

The teaching of methods of planting decorative plants would increase civic pride and city beauty.

A thrifty next generation would be developed who would be proud of Richmond, the city they developed.

### RECOMMENDATIONS

Based on the facts collected in this investigation, the following recommendations are made.

*Board of Education.*—That the Board of Education of Richmond commit itself to the plan of establishing a complete department of Vocational Agricultural Education in the public schools within the next three years. That it be the policy of the Board to require that those who are employed to direct the Vocational Agriculture, adapt their teaching to the needs of the youth of the city. The aim shall be to give the Vocational Agricultural courses to young people of the city of Richmond and those of the surrounding districts who come to the Richmond schools, who wish to take up farming as a life work. In accomplishing this end, practical projects will include the production of vegetables and small fruits, as well as general farming crops.

*Vocational agricultural department.*—The city plan of organization is shown on page thirty-one. A teacher who is trained in theoretical and practical agriculture, should be employed to teach in the Vocational Agricultural Department, and also to be the general home garden supervisor. This teacher should be employed for twelve months and his work will involve the teaching of students who wish to study agriculture from a vocational standpoint, and the training, supervising and assisting of teachers of each school district who are associated with him in vocational agricultural work.

## PLAN OF ORGANIZATION OF HOME GARDEN DEPARTMENT IN THE PUBLIC SCHOOLS

---

CITY SUPERINTENDENT OF SCHOOLS

---

HIGH SCHOOL TEACHER  
CITY AGRICULTURAL SUPERVISOR

---

(In charge of the ten part-time teachers working in the nine elementary  
schools.)

---

GARFIELD SCHOOL  
HOME GARDEN TEACHER, ASSISTANT SUPERVISOR

---

FINLEY. One part-time Home Garden Teacher.  
WARNER. One part-time Home Garden Teacher.  
STARR. Two part-time Home Garden Teachers.  
WHITEWATER. One part-time Home Garden Teacher.  
HIBBERD. One part-time Home Garden Teacher.  
VAILE. One part-time Home Garden Teacher.  
BAXTER. One part-time Home Garden Teacher.  
SEVASTOPOL. One part-time Home Garden Teacher.  
JOSEPH MOORE. One part-time Home Garden Teacher.

This teacher or teachers should be chosen in accordance with the standards and qualifications required by the State Board of Education for the administration of vocational agriculture. Vocational agriculture work approved by the State Board of Education is subject to state aid to the extent of two-thirds of the teacher's salary, in accordance with the State Vocational Educational law enacted in 1913.

### Indiana School Law

#### Vocational Education:

Section 1. Be it enacted by the general assembly of the State of Indiana, the following words and phrases as used in this act shall, unless a different meaning is plainly required by the context, have the following meanings:

1. "Vocational education" shall mean any education the controlling purpose of which is to fit for profitable employment.

2. "Industrial education" shall mean that form of vocational education which fits for the trades, crafts and wage-earning pursuits, including the occupation of girls and women carried on in stores, workshops, and other establishments.

3. "Agricultural education" shall mean that form of vocational education which fits for the occupations connected with the tillage of the soil, the care of domestic animals, forestry and other wage-earning or productive work on the farm.

5. "Industrial, agricultural or domestic science school or department" shall mean an organization of courses, pupils and teachers designed to give either industrial, agricultural or domestic science education as herein defined, under a separate director or head.

#### Establishment of Schools.

Section 2. Any school city, town or township may through its board of school trustees or school commissioners or township trustees, establish vocational schools or departments for industrial, agricultural and domestic science education in the same manner as other schools and departments are established and may maintain the same from the common school funds or from a special tax levy not to exceed ten cents on each \$100 of taxable property, or partly from the common school funds and partly from such tax. School cities, towns and townships are authorized to maintain and carry on instruction in elementary domestic science, industrial and agricultural subjects as a part of the regular course of instruction. (R. S. 1916, 6641 B.)

#### State Maintenance.

Section 14. The state, in order to aid in the maintenance of approved vocational schools or departments for industrial, agricultural and domestic science education, shall, as provided in this act, pay annually to school cities and towns and townships maintaining such schools and departments an amount equal to two-thirds of the sum expended for instructions in vocational and technical subjects authorized and approved by the State Board of Education. Such cost of instruction shall consist of the total amount raised by local taxation and expended for the teachers of approved vocational and technical subjects."

*Garfield school.*—A teacher qualified to teach vocational agriculture, should be employed for twelve months each year to teach the pupils of the Garfield school. This teacher should require that all of his pupils carry out a profitable home project each year, and he should draw his teaching lessons from the practical home work of the children. This teacher should be an assistant to the Director of Vocational Agricultural Education in Richmond and should be required to furnish a list of names and addresses, together with an outline of the project of each Garfield school pupil living in each school district, to a part-time home garden teacher of the district concerned. After school hours, on Saturday, and during the summer vacation, it should be the duty of this teacher to visit the pupils' homes and in co-operation with the district part-time teacher, to assist and instruct the children in their home projects.

In case there is a demand or need for vocational instruction in agriculture by children of Junior High School age, who are employed in Richmond and who have left school, the teaching should be done by the vocational agriculture teacher of the Garfield school. In accordance with the state law, two-thirds of the salary of this teacher may be received from the State Vocational Fund for this work, provided the pupils are fourteen years of age or over, and pursue the subject from a vocational standpoint.

*The elementary schools.*—One part-time home-garden teacher should be employed in each of the elementary schools except the Farr school, in which there are over 200 children of garden age and two teachers will be necessary. A regular grade teacher may be employed to do this work only when proof of complete and practical garden training has been given. At the present time, with one possible exception, none of the teachers in service are trained to do this work in a practical way. Three years have been given as the length of time needed to put the complete garden teaching plan into operation, in order that teachers may have time to receive training. This training may be acquired by taking summer courses at agricultural colleges, but the practical side of gardening should be taught in teachers' classes conducted after school hours by the city Supervisor.

As soon as a home garden teacher has been appointed in any elementary school, the teaching program should be so arranged that two lessons per week can be given by this teacher in each of the three upper grade rooms. Purely agricultural text-book teaching is not to form any part of these lessons but the material



for each class period should be drawn from the pupil's home work — After school, on Saturday, and during the summer vacation the home project teacher should visit the homes of the pupils and instruct them; first, to make practical kitchen gardens; second, where space admits, to raise grapes and small fruits; and where this has been thoroughly conquered, attention may be given to the planting of decorative shrubs and vines and the complete landscaping of the home. The garden teacher will be able to visit the home gardens often, as, using the school as a center, practically all of the children live within five blocks.

Each of the elementary school home-garden teachers should receive the names and addresses of all Garfield school pupils and assist the home project teacher of that school by helping to give instruction to these pupils. An effort should be made to interest all children who have working permits in home project gardening and each garden teacher should, in so far as possible, assist any one in his district who wishes advice or information on gardening. Complete reports on the financial returns of these home projects should be made and the work of the teacher should not be considered completely successful unless the combined financial returns of the projects are larger than the salary which he receives from the Board of Education.

## CORRELATION CHART

### ELEMENTARY SCHOOLS

FINLEY, WARNER, STARR, WHITEWATER, HIBBERD, VAILE,  
BAXTER, SEVASTOPOL, JOSEPH MOORE

GARFIELD SCHOOL  
(7th and 8th Grades)

---

HIGH SCHOOL

---

CITY  
SUPERINTENDENT OF  
SCHOOLS

---

STATE SUPERVISOR OF  
AGRICULTURAL EDUCATION

---

STATE SUPERINTENDENT OF  
PUBLIC INSTRUCTION  
STATE BOARD OF  
EDUCATION

---

PURDUE UNIVERSITY

SCHOOL OF EDUCATION  
INDIANA UNIVERSITY AND  
STATE NORMAL SCHOOLS

UNITED STATES DEPARTMENT  
OF AGRICULTURE

UNITED STATES BUREAU  
OF EDUCATION

**CORRELATION CHART**

Under the foregoing plan the following list of agencies should all function in working out a complete home gardening plan in Richmond.

Elementary Schools.—Ten part-time home garden teachers to teach and promote gardening; two in the Starr district, and one in each of the eight other districts.

Garfield school.—One home garden teacher and assistant city garden supervisor.

High school.—One vocational garden teacher and city garden supervisor.

City Superintendent of schools.—General administration and correlation with other school subjects.

State Supervisor of Agricultural Education.—General supervision and advice.

State Superintendent Public Instruction and State Board of Education.—Administration of state funds under vocational educational law.

Purdue University.—Furnishing agricultural information.

School of Education, State University and State Normal School.—Training of teachers and school organization.

United States Department of Agriculture.—General agricultural information.

United States Bureau of Education.—Home garden organization, adapting agricultural information to school use.

**SURVEY COMMITTEE RECOMMENDATIONS**

This study was made by the courtesy and under the direction of the United States Bureau of Education, this Bureau reserving the right to make recommendations in keeping with its usual policy for this field of work. The recommendations incorporated in the body of the report are concurred in by the Local Survey Committee and the Conference Committee, of which the State Supervisor of Agricultural Education was a member. In view of these circumstances, the General Survey Committee did not consider this report in detail.

**PART THREE**  
**PRESENT PROVISIONS FOR VOCATIONAL EDU-**  
**CATION AND SURVEY COMMITTEE**  
**RECOMMENDATIONS**



## CHAPTER XXVI

### THE SCHOOLS AND CHILDREN OF RICHMOND

For the general facts concerning the development of the Richmond schools, the reader is referred to Chapter II, "The City of Richmond."

*School enrollment.*—On February 1, 1916, there were 3,774 pupils enrolled in the Richmond public schools, approximately 1,000 in the four parochial schools and 100 in a private business college. The public school enrollment is as follows in the various schools:

	Boys	Girls
High school (grades 9 to 12, inclusive) . . . .	361	356
Garfield school (grades 7 and 8) . . . . .	312	275
Elementary schools (kindergarten to grade 6, inclusive) . . . . .	1,236	1,234
Total . . . . .	1,909	1,865

TABLE 28

NUMBER OF PUPILS OVER, NORMAL AND UNDER AGE BY  
GRADE AND SEX

GRADE	Over Age		Normal Age		Under Age	
	Boys	Girls	Boys	Girls	Boys	Girls
1 . . . . .	3.4	2.8	94.7	94.8	1.9	2.4
2 . . . . .	10.1	5.7	82.2	84.1	7.7	10.2
3 . . . . .	10.2	7.6	78.0	71.7	11.8	20.7
4 . . . . .	17.8	13.2	61.1	65.9	21.1	20.9
5 . . . . .	25.9	13.5	56.8	68.6	17.3	17.9
6 . . . . .	13.9	11.2	71.6	72.5	14.5	16.3
7 . . . . .	23.1	14.7	57.9	62.0	19.0	23.3
8 . . . . .	21.6	9.8	61.9	65.2	16.5	25.0
9 . . . . .	23.3	12.6	58.9	68.1	17.8	19.3
10 . . . . .	12.6	8.6	63.3	65.5	24.1	25.9
11 . . . . .	17.8	13.9	58.4	59.6	23.8	26.5
12 . . . . .	8.3	11.6	68.1	62.5	23.6	25.9
Average total . . . .	14.6	8.8	71.2	74.6	14.2	16.6

*Progress of pupils.*—The progress of pupils in terms of percent age of average, normal and under age for each grade is reported in Table 28. It will be noted that the greatest percentage of over-ageness occurs in the fifth, seventh, eighth and ninth grades. In these grades, also, occur the greatest elimination.

*Elimination of pupils.*—The Superintendent of Schools prepare annually an age grade table from which the facts of elimination may be roughly computed. These tables, which are available for a number of years preceding the present, show the holding power of the schools to be above the average. For the facts of elimination which are significant for the purposes of vocational education, the reader is referred to Chapter XXIV, "Juvenile Employment."

TABLE 29

PRESENT PLACE IN THE GRADES OF 13 AND 14 YEAR OLD  
BOYS AND GIRLS

13 Year Old Pupils		GRADE	14 Year Old Pupils	
Boys	Girls		Boys	Girls
	2	3		
4	3	4	1	2
23	7	5	1	
23	14	6	4	4
45	38	7	32	19
50	50	8	36	30
21	20	9	40	47
1		10	19	21
		11	1	4
		12	1	0
167	134	Total	135	127

*Thirteen and fourteen year old pupils.*—It is most significant to note where the thirteen and fourteen year old boys and girls are now enrolled in the school system, because from among them will come the new crop of working permit pupils. These facts are reported in Table 29.

*Fourteen to sixteen year old pupils.*—In the consideration of day vocational courses, the most vital facts are those concerning youths between the ages of fourteen and sixteen. In Richmond,

according to the school census taken in April, 1916, there was a total of 432 males of the ages of fourteen, fifteen and sixteen years. Of this number, 231 were enrolled in the public schools and 65 in the parochial schools. Eighty-five were reported as working and no data was secured from 49. It is reasonable to assume that the majority of the 49 about whom no information was obtained were unemployed.

There were 451 females of the ages of fourteen, fifteen and sixteen years reported as living in Richmond on the same date. Of this number 213 were enrolled in the public schools and 94 in the parochial schools. Sixty-six were reported as working and no data was secured from seventy-eight.

In the case of both sexes it is thus seen that the majority are still in school, and that their needs may be met by establishing vocational courses in the regular schools. This is quite contrary to the usual conception that the majority of these ages are out of school, and that, therefore, continuation education is more seriously needed than vocationalizing the courses for those now in attendance in the schools.

*Richmond situation typical.*—In view of the large number of detailed studies which have been made and reported concerning the general facts of school enrollment, progress of pupils, etc., and the similarity of the findings in Richmond to previous findings, a large part of the data gathered is not reported in detail. The Richmond situation is typical of cities of the 25,000 class the country over, with the exception that the holding power of the schools is somewhat greater than the average.





## CHAPTER XXVII

---

### PRESENT PROVISIONS FOR INDUSTRIAL, COMMERCIAL AND HOUSEHOLD ARTS INSTRUCTION IN RICHMOND SCHOOLS

As day vocational courses for the Richmond children must be related to the school system as a unit, it is essential to determine the scope, purpose, content and provisions in terms of equipment, teachers and supervisors for industrial, commercial, household and other related courses now being taught.

The data upon which the following summaries and analyses of the present courses are based were derived from conferences with the Superintendent of Schools, supervisors and teachers, and a careful study of course outlines prepared by supervisors and teachers. No attempt was made to measure the quality of classroom instruction.

#### **The Elementary Schools: Grades One to Six Industrial and Fine Arts**

*General organization and supervision.*—The industrial and fine arts courses in the first six grades are organized and directed by a special supervisor. The supervisor prepares the course outlines, orders and distributes the necessary supplies, meets the grade teachers for frequent discussions concerning the work to be done and visits the various classes during the industrial and fine arts periods, to supervise instruction and render necessary assistance to the teachers. The supervisor is assisted by a high school teacher, who helps in the sewing and cooking in the sixth grades, on a part-time basis.

*Purpose of courses.*—The purpose of the course in industrial and fine arts in the first six grades as expressed by the supervisor is “the development of social intelligence and appreciation through understanding the things of the environment which have resulted from man’s transformation of the raw materials about him into finished products to meet the needs for records, food, shelter, clothing, tools and utensils.”

The viewpoint of the Speyer School Curriculum of Teachers’

TABLE 30  
INDUSTRIAL ARTS FOR ELEMENTARY SCHOOLS

	Grade I	Grade II	Grade III	Grade IV	Grade V	Grade VI	Remarks
Foods.....	Foods studied as to use in home and community. Grouped around seasons. Visits to bakery, dairy, and farm.	Foods of home compared with primitive peoples: Tree Dwellers, Cave Men, Indiana. See History.	Foods of home compared with peoples studied: Later Cave Men, Hebrew Peoples, Early Richmond Settlers. See History.	Foods of home compared with peoples studied: Greek Stories, Roman Stories, Colonial People. See History.	Foods of people studied in history and geography compared: Middle Ages, English History, Early U. S. History.	Foods studied as outlined to unify with the cooking, Geography and history.	Special Studies. Books: U. S. Bulletins, How the World is Fed, Stories of Useful Inventions.
Shelter.....	Shelter studied as to home and community. Nature's methods, etc. Work centered around the seasons.	Shelter, Home compared with Tree Dwellers, Cave Men, Indiana.	Shelter. Present housing condition compared with: Cave Men, Hebrew Peoples, Early Richmond.	Study of Colonial homes and the Greek and Roman buildings.	Review shelter and study building material as they come in with study of history and geography, etc.	Study woods and building construction. Visit shops and houses in construction. Woodwork for boys.	Books: How the World is Housed, Home Life in All Lands.
Clothing.....	Seasons taken as center. Clothing of family, animals and plants studied.	Clothing. Present use compared with: Tree Dwellers, Cave Men, Indiana and Early Peoples.	Clothing of people now compared with: Cave Men, Hebrew People, Early Richmond, Dress the Dolls.	Study of cotton, wool and flax. Collect samples. Use in Colonial times. Use by Greeks and Romans. Sewing and weave large rug.	Review textiles as they come in history and geography study.	Study of silk and review other fabrics. Modern use of textiles; cost, economic value and artistic use. Girls make cooking apron, cap and towel.	Books: Home Life in All Lands, How the World is Clothed, Collections of Pamphlets.
Clay and Earthen Products.....	Study of clay. Make toys, dishes, animals and vegetables in the round.	Study of clay. Illustrations, Toys, dishes for doll's house, foods for Thanksgiving, etc.	Study of clay. Illustrations in relief of stories, sand table construction, etc. See history and geography.	Study and use whenever necessary for illustrative purposes.	Make tiles, pottery and low relief construction, study clays, brickmaking, tiles, etc. History of pottery and china.	Concrete used whenever needed to construct. Study mixing, laying, etc.	Books: Portland Cement to M-7 Book, Clay and Clay Products (Ries).
Records.....	Booklets. See Ind. Art I.	Picture Booklet, Pilgrim.	Pilgrim Booklet, Christmas Booklet, Bird Booklet.	Tree Book. Japanese binding in fine arts.	Study the evolution of the book, story of paper. Cardboard construction. Make pad, art book, portfolio.	Make a Cookbook. Illustrate. See fine cuts.	Books: Stories of Useful Inventions, World is Housed.

<p>are tools now d in community rith: Cave Men. Iebrew Peoples. eally Richmond.</p>	<p>Compare tools used now here with Col- onial peoples, Greeks and Romans.</p>	<p>Study, The match. The stove. The lamp. The forge. The steam engine. The boat and car- riage. The locomotive.</p>	<p>Metals, clays, etc., used in shop work and in shops visited. Mod- ern uses, cost, etc.</p>	<p>Woods, bones, Stories of useful in- ventions. Electricity for Be- ginners.</p>
<p>Continued.</p>	<p>Sewing on buttons, patching, darning.</p>	<p>Mending school appar- atus. Mending shoes.</p>	<p>Chair carving, etc.</p>	

TABLE 31  
FINE ARTS FOR ELEMENTARY SCHOOLS

	Grade I	Grade II	Grade III	Grade IV	Grade V	Grade VI	Remarks
Representation, Drawing and Painting.....	Grasses, fruits and flowers. Illustrations from home life, stories, life, toys, industries. Holidays and seasons.	Drawings from nature: flowers, fruits, etc. Illustrations from home life, stories from history, reading, language, nature, toys, games and industries.	Drawings and paintings from nature: Trees, fruits, animals, still life, and poses. Toys.	Drawings and paintings from nature: Trees, fruits, animals, still life, and poses.	Drawings and paintings from nature: Trees, vegetables, still life, and poses. Both circular and angular perspective used in interior.	Drawings and paintings from nature: Trees, vegetables, still life, and poses. Both circular and angular perspective used in interior.	The Spiral system is used and pupils in advanced grades do better work.
Modelling. See Industrial Arts Chart.	Model fruits, vegetables and toys. Dishes, utensils, etc. Illustrate stories studied.	Model fruits, vegetables and animals. Illustrate stories studied. Dishes, toys and utensils for doll's house.	Illustrate stories studied. See Industrial Arts Table.	Illustrations and modeling. See Industrial Arts Table.	Pottery. See Industrial Arts. Tiles made and decorated in fine art period.	Concrete: How to mix. Applied to school work, playground, etc.	Decorations in fine art are unified with Industrial Arts.
Paper Cuttings, Stencils, Poster Making.	Illustrations unified with other school work. Spacing studied.	Continued.	Continued.	Continued.	Stencils for decorations, posters and advertisements.	Same as Grade V.	Elementary design and spacing: Color harmony.
Design, Line.....	Border designs for boxes needed, black-board decorations, etc.	Border for wallpaper for doll's house, dresser scarf, bedspread and table cloth.	Border for model house, curtains, scarfs, doll's dress.	Borders for holders, pencil cases, paint-box cases. See clothing outline. Holiday decorations.	Designs for cards, posters and advertisements.	Border designs for aprons and textiles used, advertisements, etc.	Good spacing in all work done.
Tone and Color.....	Borders and all-over designs in tone, then color. Applied in booklets and room decorations.	Designs for rugs and decorations for doll's house, booklets, etc.	Designs for rugs, decorations for model room, booklets and cards.	Border and all-over design for textiles, art books, tree books, advertisements and cards.	Book-covers, rugs, interiors, furniture design, draperies and exteriors.	Continued.	Everything in good massing and tone.
Picture Study, Elementary Study of Artistic, Architecture, etc., in Art History.	See separate lists.	See separate lists.	See separate lists.	See separate lists.	See separate lists.	Continued.	Outlined to unify with other work of schools.

College has been adopted for this work in Richmond, and the realization of the Speyer course is the goal toward which the supervisor is working.

There is no sharp line of division between the work in industrial and fine arts in the first six grades, and wherever possible, these courses are closely related to the other school curriculum.

*Required or elective.*—All courses in the first six grades are required of all boys and girls enrolled, except in the sixth grades, where the girls do some cooking and sewing not required of the boys, and the boys do some work in wood and cement construction not required of the girls.

*Who teaches and where taught.*—In all of the first six grades, the industrial and art courses are taught by the regular grade teachers. Regular class rooms are used, with the exceptions that in the Whitewater and Finley schools, cooking rooms are available for the use of the sixth grades, the other sixth grades, going to the high school cooking laboratory.

*Time allotment.*—The time allotment is as follows:

First grade 5 recitations weekly of 30 minutes each

Second grade 5 recitations weekly of 30 minutes each

Third grade 5 recitations weekly of 30 minutes each

Fourth grade 5 recitations weekly of 30 minutes each

Fifth grade 3 recitations weekly of 1 hour and 30 minutes each

Sixth grade 3 recitations weekly of 1 hour and 30 minutes each

*Equipment.*—The tools and equipment ordinarily used for class work in industrial and fine arts are available in Richmond. These include rulers, scissors, sand tables, blocks, crayons, paints, paper, clays, textiles, etc. In the Whitewater school a room in the basement 29½x24½ feet with 8½-foot ceiling is provided with a cooking equipment valued at seventy-five dollars. This equipment includes cooking tables, gas stove, range, hot plates, sinks and the usual number and kinds of cooking utensils.

*Courses.*—Tables 30 and 31 give a birdseye view of the industrial and fine arts courses.

### **The Garfield School: Grades Seven and Eight**

*Present building and facilities inadequate.*—All of the seventh and eighth grade pupils in the Richmond public schools are grouped in a single school centrally located, called the Garfield Junior High School. The present building is very old and not well adapted to

the needs of the school. No attempt is made in this report to show in detail that this building is inadequate, because the Board of Education has already committed itself to the policy of erecting a new building, pending the completing of the Survey and its recommendations.

*Enrollment and general organization.*—In the second semester 1916, there were 315 boys and 275 girls enrolled in the school. Of this number, 23.1 per cent. boys and 14.7 per cent. girls in the 7th grade were average, and 21.6 per cent. boys and 9.8 per cent. girls in the 8th grade were average; while there were almost as many under age, there being 19.0 per cent. boys and 16.5 per cent. girls in the 7th grade under age, and 23.3 per cent. boys and 25.0 per cent. girls in the 8th grade under age.

The school is administered by a principal and assistant and 20 teachers. Quoting from the school bulletin regarding the general plan of school organization, "Pupils are grouped in assembly rooms alphabetically, without reference to grade, and as far as practical, remain in the same room and in charge of the same teacher through all terms spent in the school. This plan gives the pupil a sense of permanency, the lack of which was found at first to be one of the chief objections to the departmental plan of organization. Assembly rooms for boys are in charge of men and those for girls in charge of women.

"The school day is divided into six periods of fifty minutes each, and one of thirty minutes, classes in arithmetic, geography, history, etc., recite twenty-five minutes and then spend twenty-five minutes in the preparation of the next day's lesson in the same subject under the supervision of the teacher.

"Promotion to high school is on the credit system, the total number of credits possible for each term's work being six, or twenty-four for four terms; but a pupil who has twenty-two is promoted, provided no two of the credits short are due in the same subject.

"At the close of the 7B term pupils who have shown exceptional ability are placed in a special class and the work so arranged that they are ready for high school in two terms more instead of three regularly taken. About one-fourth of the pupils are able to do this special work.

*Course of study.*—"The course of study is made up of the common branches as usually taught in the seventh and eighth grades except that the pupils are permitted to elect for one-sixth of their

work, one of the following: Latin, German, English Composition, or Industrial work. Only pupils who have been strong in the previous work are permitted to elect the Latin and German and one high school credit is given in either of these subjects." This apparent elective system is not really an elective system, as pupils averaging under 85 in scholarship in the 6th grade, are automatically placed in the industrial group and others in the language group.

According to the statement in the school bulletin: "The industrial work offered is conducted more with a view of enabling the pupils to discover in what line his talents lie than to preparing him for any particular trade. The course includes printing, wood-work, and mechanical drawing for the boys; and sewing, cooking and other home topics for the girls." As yet, this laudable purpose has in no wise been realized.

All boys have five fifty-minute periods weekly of industrial work during the two years' course. This includes only wood-working, mechanical and free-hand drawing. All girls are required to take five fifty-minute periods of household arts work.

For the boys who elect the industrial course, printing is added to the woodwork or drawing; and for the girls electing what is called the "industrial course," more extensive work is done along the line of household arts work.

*The limitations of the present plan.*—While little will be gained by discussing the limitations of the present building and equipment, much will be gained by throwing open the basic problems involved in the present plan of organization of the school. Upon completing the 6A grades, pupils receive a card upon which they, in co-operation with their parents, may specify the course the pupil desires to elect in the Garfield school. The options are Latin or German for the boys and girls whose average in all school subjects was 85 or over; or English Composition and Industrial work for boys and girls whose average scholarship was under 85. Teachers report that practically none of those who have a scholarship mark above 85 elect the industrial work. For example, of the 41 boys in the 7B grade who have elected the industrial work, all but 2 were ineligible on account of poor scholarship to take Latin or German. Having elected the industrial work, they cannot take the extra English Composition course, which is needed in connection with printing. The 41 boys taking printing for the first time, are those whose scholarship was rated as poor in the lower grades, and, if the teachers' rating of poor scholarship was



correct, the boys cannot become successful printers, and are thus exposed to work in which they stand but slight chance of success.

The whole plan of the Garfield school now actually operates so that the industrial courses are taken by the boys and girls who have not succeeded in the lower grades. Their records in industrial work, also show that they are not doing well in this work according to the standards of the teachers.

Another phase of the plan deserves consideration. To graduate for the high school, certain work in Latin or German is required. The "industrial" boys and girls in the Garfield school are barred in this school, from beginning the language work they will have to take in the high school. This all operates to discourage these boys and girls from entering the high school.

*Number electing industrial and household arts courses.*—The following boys and girls of each grade are at present in the so-called industrial group:

Grade	Boys	Girls
7B.....	41	21
7A.....	38	22
8B.....	27	16
8A.....	26	27
<hr/>		<hr/>
Total.....	132	86

*General course descriptions: Industrial.*—The industrial courses are old fashioned Manual Training courses, of a mediocre type; here rated as mediocre because of poor rooms and equipment, projects of but little interest to boys, and entire lack of content value regarding industry and industrial life. Aside from the addition of printing, given the boys electing the industrial work, their work is just the same in type as the work for the other boys, only more intensive.

*General course descriptions: Household arts.*—All courses in the household arts are modern in purpose, and although rooms and equipment are far from adequate, the courses are rich in content and practical value. The courses in sewing and cooking required of all girls, are similar in organization to the best courses now taught. The girls electing the additional work in household arts, prepare and serve meals on a family basis, assist in the lunch rooms, and make garments of practical value.

### The High School: Grades 9 to 12

During the last three years the curriculum of the Richmond High School has been enriched and modified. A new course of study and program of studies was adopted May, 1916, superseding the course adopted January, 1914. The new course makes departmental election possible and recognizes that similar programs of work should not necessarily be followed by those who are going to college and those who are not going to college. Four curricula of study are suggested: College preparatory, industrial, domestic science and art, and commercial, the last three being divided into two types on the basis of college expectancy. A series of major and minor studies is proposed, but regardless of the departmental election, each pupil in the school must complete for graduation:

- 3 years of English
- 1 year of American history
- 1 half year of civics or economics
- 1 year of music or drawing
- 1 year of physical training
- 3 years in some five-hour subject other than English
- 2 years each in two five-hour subjects other than those chosen for the major three years elective work.

The new course involves the addition of no new subjects or modifications of subject-matter or point of view in subjects now taught, but consists, in the main, of a re-arrangement of subjects into course and departmental combinations, permitting a greater degree of election and specialization.

*No vocational courses.*—None of the work of the high school is on a vocational basis, interpreting "vocational" according to the rulings of the State Board of Education. This Board has defined a vocational course as one preparing specifically for a given vocation and requiring that one-half of the time of the pupil shall be spent in technical work and the other half in the related academic work.

*Method of reporting enrollment.*—For purposes of classifying pupils enrolled in the high school, the traditional terms of Freshman, Sophomore, Junior and Senior do not appear on the school records, the new basis being the number of units of credit pupils

have actually received. On the "unit of credit basis," classification is as follows:

- Those having 1 to 7 units of credit
- Those having 8 to 15 units of credit
- Those having 16 to 23 units of credit
- Those having 24 to 32 units of credit

This classification is used in this report. Enrollment is reported as of the second semester 1916.

#### Industrial Arts

*General organization and supervision.*—A supervisor is in charge of all industrial courses in the high school and Garfield school, but the major portion of his time is spent in teaching high school shop and drawing classes. All industrial drawing courses are of a very high order, well taught and administered in rooms specially designed for the purpose.

*Purpose of courses.*—It is very difficult to determine the specific purposes of these courses in the Richmond High School from either the teachers' or pupils' point of view. Moreover, the industrial arts teachers seem to agree that nothing would be gained by sharply defining the purposes of the courses. In conference, these teachers expressed the view that the courses as now organized give occupational information which is worth while, that they have wage-earning value, that they constitute a valuable preparation for future technical courses, that they have appreciative values in assisting pupils in understanding economic conditions and problems and in selecting home furnishings, and further, that they are worth while as a part of a good general education, that they are instrumental in keeping pupils in school and in retaining and broadening the interests of boys already enrolled.

In all probability, the one fact of most significance about this work in the Richmond High School is that courses were originally introduced not for any one or more of these specific reasons, but because it is customary to have such courses in well organized high schools in cities like Richmond. To some, the courses have unquestionably had wage-earning value. This is particularly true of the printing courses, as those who take these courses and later become apprentices are accredited hour for hour on their apprenticeship for the work done in the school. The courses probably are of worth to other pupils as preparation for technical college courses, and to others in stimulating their interest in school work.

*Required or elective.*—All courses are elective. Any number may be elected.

*Industrial arts curriculum.*—The combination of subjects comprising the industrial arts curriculum is as follows:

A. For those who will enter Engineering or Polytechnic schools.

1. In meeting the general requirements for graduation, the pupil must do the work outlined under the College Preparatory Curriculum, and elect shop work, mechanical drawing and allied courses.
2. The following work is suggested:  
English, 3 years  
Algebra,  $1\frac{1}{2}$  years  
Geometry,  $1\frac{1}{2}$  years  
Physics, 1 year  
Chemistry, 1 year  
Latin or German 2 years  
American History, 1 year  
Civics or Economics,  $\frac{1}{2}$  year  
Shop Work and Drawing, 4 years  
Electives (chosen with consent of teacher advisor).

B. For those who will not attend college.

1. The pupil must meet the general requirements for graduation.
2. Shop work, mechanical drawing, and allied courses should be emphasized.
3. The following work, expressed in terms of general requirements for graduation is suggested:  
English, 3 years  
Shop Work and Drawing, 3 or 4 years  
Mathematics or Science 2 years  
History, Foreign Language, 2 years  
Electives (chosen with consent of teacher advisor).

*Courses, time allotment and enrollment.*—All courses are one semester in duration and meet five times in two weeks (three times one week and two times the next) for a sixty-five-minute period, except when otherwise noted. The general practice is to couple a drawing with a shop course, thus the student has one industrial arts recitation each day.

**TABLE 32**  
**NUMBER OF BOYS TAKING SHOP COURSES, HAVING EACH**  
**NUMBER OF CREDIT HOURS**

COURSES	1 to 7 Credit Hours	8 to 15 Credit Hours	16 to 23 Credit Hours	23 to 32 Credit Hours
Benchwork I (2 sections) . .	21			
Benchwork II (2 sections) . .	18			3
Carpentry . . . . .				4
Pattern making I . . . . .			7	
" " II . . . . .		2	14	1
Forge Shop I . . . . .	4	10		
" " II . . . . .		26	1	1
Machine Shop I . . . . .			2	2
Printing . . . . .	10	4	5	4
Mechanical Drawing I . .	12			
" " II . .	10			1
" " III . .	2	10		
" " IV . .		23		
" " V . .			5	
" " VI . .		4	16	2
" " VII . .			1	3
" " VIII . .			1	2

*Future work of boys taking industrial courses.*—One hundred and nineteen boys were enrolled in the second semester in the various industrial art courses. Of this number:

- 79 expect to go to college
- 23 do not expect to go to college
- 17 are undecided about going to college

The departmental choices for college courses of those expecting to go to college are:

- 32 some kind of engineering
- 27 not decided
- 4 industrial arts
- 3 agriculture
- 3 mathematics
- 2 chemistry
- 2 physical training

1 each, military, physics, architecture, drafting, science, commerce and chemistry

The twenty-three who are not going to college gave reasons as follows, for not taking the work:

- 12 liked the work
- 6 preparation for life work
- 2 had to take something
- 1 as an aid to get a good position
- 1 to help on farm
- 1 because course was easy

#### Bench Woodwork and Carpentry

*Equipment.*—The classes in bench woodwork and carpentry use a room 24x44 feet, with an equipment valued at about \$1,225.

This equipment includes:

- 1 No. 50 Fay and Egan 36-inch band saw
- 1 No. 187 Fay and Egan double mandrell saw table
- 1 No. 254 Fay and Egan bench hand planer and joiner
- 1 tool grinder
- 10 double wood benches
- 1 teacher's bench
- 18 sets of tools for benchers
- 2 cabinets for work

Miscellaneous woodworking tools

*Courses.*—Benchwork I is a course in joinery including mortise and tenon, rabbit and dado, half lap and dove tail. Application of these joints is made in projects of the pupils' selection. Instruction is given concerning the proper use and care of tools. Talks are given on the use of various woods, board measure, stains, fillers and varnishes. Benchwork II is a continuation of Benchwork I and involves the construction of more difficult cabinet pieces and instruction about saw action and planing and joining. The class in carpentry was organized to take care of part of those who would have taken machine shop practice, had there been adequate facilities. Boys in this course do the community work of the school in making repairs and manufacturing furniture. They care for their own tools, operate power, rip and cut-off saws, band saw and hand joiner. Each boy must file one hand saw. They also are required to make drawings of work to be done, estimate the amount and cost of material required. All the boys taking this course are in the senior class, and none of them intend to be carpenters.

**Pattern Making**

*Equipment.*—The pattern making classes are instructed in a room specially equipped for the purpose, and used only for these classes. The room is about 22x50 feet, well lighted and contains equipment valued at about \$2,100. The equipment includes the following:

- 16 wood turning lathes with self contained motors
- 16 sets bench and turning tools
- 1 demonstration bench
- 1 cupboard
- 1 tool case
- 1 glue table
- 2 dozen hand screws, saws, chisels, files, braces, etc.

*Courses.*—Two pattern making courses are offered. Course I consists of the use of the bench tools which the student has not had in his previous woodworking courses; also the use of the turning lathe involving the correct use of the different turning tools and the different cuts, such as spindle, face plate, boring and chuck work and two center work. After the student has mastered these things reasonably well, a few simple patterns are made, involving such principles of pattern making as draft shrinkage, finish cores, etc. Course II involves the construction of different types of patterns. The principles of the trade taught, along with elements of design of mathematics.

**Forge Shop Work**

*Equipment.*—Forge shop classes meet in a specially equipped shop on the first floor, 30x65 feet. The equipment is valued at about \$2,000. The equipment includes:

20 Sturtevant Forges, connected with force draft and smoke removal conduits which are motor operated

- 2 motors, 10 h.p.—15 h.p.
- 20 anvils and blocks and hand tool
- equipment for 20 forges
- 1 spring power hammer
- 1 vertical spindle drill press
- 1 demonstration forge

An emery stand, a power punch and shear motor and line shaft for driving same; three benchers with lockers and vises.

*Courses.*—Two forge shop courses are offered. Forge I includes the fundamentals such as drawing out, upsetting, binding, form-

ing, twisting and welding; also care of fires and tools. Forge II includes welding, tool making and brazing.

#### Machine Shop Work

*Equipment.*—For the machine shop class the Board of Education has rented a small shop across the street from the high school. This shop is equipped with bench tools, drill press, lathes and shaper and other small tools and machines.

*Courses.*—According to the statement of the teacher, the purpose of the course is to give practical experience to those students who wish to directly enter the machinists' trade, or who wish to pursue technical courses in a higher school. The course includes work at bench, such as filing and chipping, and lathe work and work on shaper and drill press. It will be noted that attendance in this course is limited to juniors and seniors, none of whom will probably become machinists.

#### Printing

*Equipment.*—The printing courses are conducted in a room 23x31 feet, located on the first floor of the old high school building. The equipment, valued at about \$1,900, includes:

- 10x15 Gordon Job Press, Motors, 50 pounds 8 point Roman
- 14x22 Colts Job Press, Motors, 25 pounds 6 point Roman
- 26-inch C. & P. paper cutter
- Drying rack
- One imposing stone
- Wood furniture
- Metal furniture
- Leads and slugs
- Brass rule
- Three type cabinets
- 200-pound 10 point body type Roman
- 50 fonts job type
- 1 ink cabinet
- 1 Boston staple binder
- 1 plow and press
- 1 standing press
- 1 lying press
- Galleys, sticks, tweezers, make-up rules, tables

*Course.*—The purpose of this course is to teach the trade of printing, to the extent of making pupils mechanically proficient,



so that should they desire, they could go on with the trade and would have a working knowledge which the regular apprentice does not possess; also to aid the English classes in spelling, punctuation and correct use of English. Ordinary job work, such as is encountered in the day's work of a regular shop is done. All phases of hand composition and press work is included.

#### Mechanical Drawing

*Equipment.*—Two rooms each 34x32 feet, are used for mechanical drawing, each having an equipment valued at about \$325. The rooms are well lighted. Each equipment includes:

- 1 filing case
- 1 cupboard
- 20 drawing desks
- 20 sets drawing instruments
- 20 sets T squares, triangles, scales and drawing boards
- 1 teacher's desk
- 1 blue print frame

*Courses.*—Eight mechanical drawing courses are offered. Drawing I and II consists of geometric construction and orthographic projections. Drawings of three views are made, involving sections and intersections; many shop drawings are made of projects being constructed in other departments. Tracings and blue prints are also made. Drawing III includes orthographic projection and development of surfaces. Drawing IV includes isometric and cabinet projection. Drawing V includes machine construction and parts. Drawing VI is a continuation of Drawing V, and deals with the drafting of cams, motion diagrams and gears. Drafting VII includes gears. Drafting VIII is architectural drawing, including conventional forms, details of window, door, porch and frame construction, also drafting set of house plans, including floor, elevation and roof plans.

*The limits of the industrial work.*—The present courses are well taught, and the physical facilities including rooms and equipment are adequate. The lack of definiteness of purpose constitutes the most serious limitation of the present type of organization. The reader recognizes the organization as being typical of the usual general high school. Seniors are engaged in carpentering and machine shop work. Youths not going to college who may enter industrial pursuits are working in the same classes or pursuing the same courses as those who plan to complete a college

education. The needs of these groups cannot be met in the same course. For those who are taking industrial courses as a preparation for wage-earning, radical reorganization is necessary in teaching staff, course content, organization, time schedule and equipment.

#### Commercial Courses

*General organization and supervision.*—The commercial courses are supervised by one of the male commercial teachers, who is head of the department. While the commercial work has not been organized on a departmental basis, a considerable number of pupils, however, elect, during the third and fourth years, a sufficient number of courses, so that for these pupils, the commercial work constitutes a line of major interest and specific vocational education. The work for both boys and girls is identical.

*Purpose of courses.*—While it may be fairly said that the Richmond industrial arts courses are for general education, the commercial courses, in marked contrast, are for vocational education. They are more nearly vocational than any other work in the school. The vocational aim is noted not only by the content and organization of the courses themselves, but by the fact that the head of the department receives calls from local offices for workers, finds suitable positions for graduates and permits senior pupils to hold part-time positions receiving regular school credit for such work. Recommended graduates receive as beginners, between six and eight dollars weekly wage.

*Required or elective.*—All courses are elective. Any number may be elected. Those who expect to receive the recommendation of the school for commercial positions are required to pursue all courses offered.

*The commercial curriculum.*—The curriculum indicates the following combination of courses:

A. For those interested in commercial subjects who expect to attend college.

1. In meeting the general requirements of graduation, the pupil must do the work outlined under the college preparatory curriculum and elect as much commercial work as possible.

B. For those expecting to take positions upon the completion of their high school course.

1. The pupil should complete the following commercial work, in meeting the requirements for graduation:

Penmanship,  $\frac{1}{2}$  year  
 Commercial Arithmetic,  $\frac{1}{2}$  year  
 Bookkeeping, 2 years  
 Stenography, 2 years  
 Typewriting, 2 years  
 Commercial Law,  $\frac{1}{2}$  year  
 Salesmanship,  $\frac{1}{2}$  year  
 Commercial English and Spelling, 1 year

2. In general, pupils who have not completed the above commercial work, will not be recommended for positions.

*Course, time allotment and enrollment.*—All courses, except when otherwise noted, are on a one semester basis, and meet five times each week for a 65-minute recitation period.

**TABLE 33**  
**NUMBER OF BOYS AND GIRLS TAKING COURSES, HAVING**  
**EACH NUMBER OF CREDIT HOURS**

COURSES	1 to 7 Credit Hours		8 to 15 Credit Hours		16 to 23 Credit Hours		24 to 32 Credit Hours	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Bookkeeping I.....	1		10	23	5	4		
" II.....			1		14	8	2	1
" III.....					14	11	4	
Stenography I.....			4	1	4	6	1	
" II.....			2	1	14	13	2	7
" III.....					1	2	7	8
" IV.....							10	23
Typewriting I.....			7	1	4	6	1	1
" II.....			1		16	17	2	4
" III.....								
Penmanship I.....	2		8	6	3		2	3
Commercial arithmetic.....			21	15	3	1	1	2
Commercial English (2 sections).....			2		12	10	9	9
Commercial law.....							5	9
Salesmanship.....			3	9			6	3



*Future work of seniors now taking commercial courses.*—Twenty-three girls and sixteen boys who have sufficient credits to graduate from the high school in June, were enrolled in one or more of the commercial courses in the last semester. A study of the individual reports made out by these pupils reveals the fact that of the total number:

8 girls and 3 boys do not expect to go to college  
9 girls and 9 boys expect to go to college  
6 girls and 3 boys are undecided about going to college

*Commercial courses taken by those not going to college.*—In all probability, the majority of those not going to college who are not in their senior year, and now taking commercial courses, will enter some line of commercial employment. It is of the utmost importance to find out the exact preparation of these pupils for this work.

Summarizing the entire time spent by these girls and boys in commercial work during the four years high school course:

1 boy and 0 girls has taken 1 semester's work  
0 boys and 1 girl has taken 12 semesters' work  
0 boys and 4 girls have taken 13 semesters' work  
2 boys and 1 girl have taken 14 semesters' work  
0 boys and 1 girl has taken 16 semesters' work  
0 boys and 1 girl has taken 17 semesters' work

It will be noted that the majority of these boys and girls not going to college have spent about one-half of their time during the four years' course, pursuing commercial subjects.

*Commercial courses taken by those going to college.*—Nine boys and nine girls taking one or more commercial courses in their senior year in the high school, indicate that they are going to college. The number of semester commercial courses taken by these boys and girls is indicated in Table 35.

Summarizing the entire term time spent by these boys in commercial work during the four years high school course, the majority have spent one-fourth of their time during the four years' course, pursuing commercial courses.

It is interesting to note in connection with commercial work taken in high school, the courses which these girls expect to pursue in college. Four girls plan to major in music and these four have

TABLE 35

NUMBER OF SEMESTER COURSES OF EACH COMMERCIAL  
SUBJECT TAKEN BY NINE GIRLS AND NINE BOYS  
GOING TO COLLEGE

COURSES	Number of Semester Courses Taken							
	4 Courses		3 Courses		2 Courses		1 Course	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Stenography.....	4	4	.....	.....	.....	.....	.....	.....
Typewriting.....	4	4	.....	3	.....	.....	.....	.....
Bookkeeping.....	.....	.....	5	5	1	2	.....	.....
Commercial arithmetic...	.....	.....	.....	.....	.....	.....	2	3
Commercial law.....	.....	.....	.....	.....	.....	.....	3	6
Commercial English.....	.....	.....	.....	.....	.....	.....	2	4
Penmanship.....	.....	.....	.....	.....	.....	.....	1	6
Salesmanship.....	.....	.....	.....	.....	.....	.....	6	.....

taken respectively, 1, 13, 12 and 15 semester courses in commercial work. The two who will major in English have taken 6 and 8 semester courses; the two undecided as to college courses have taken 3 and 13 courses, and the one who will major in art has taken 13 commercial courses.

There seems to be connection between the commercial courses taken in the high school and future courses which boys plan to take in college. Four boys who are undecided as to college courses have taken 2, 3, 14 and 15 semester courses respectively in commercial work. One each has decided to major in science, English, physical culture, engineering and journalism and these boys have taken respectively 9, 1, 1, 1, and 14 semester commercial courses.

#### Stenography

*Courses.*—Four stenographic courses are offered. The purpose of Course I is to thoroughly master the principles upon which the Gregg system of shorthand is based, paying careful attention to all necessary rules found in the first nine lessons of the system. Course II includes the last eight lessons of the Gregg manual, paying close attention to fundamental rules and developing some phrasing. In Course III a certain number of letters are assigned for practice work, to be written and read in class. Some attention is given to speed, but the emphasis is primarily upon accuracy.

In Course IV regular assignments are made from Gregg Speed and Practice for developing ease and speed. The texts used in these courses are Greggs' Manual, Greggs' Speed Practice and Eldreges' Speed Book.

#### Typewriting

*Equipment.*—The room for typewriting is 23x25 feet and contains an equipment valued at \$1,250.

- 15 Underwood typewriters
- 10 Remington typewriters
- 24 typewriter desks and chairs
- 20 files and miscellaneous equipment

*Courses.*—There are four typewriting courses. Course I is the beginning course and students learn correct position at a machine, location of keys on keyboard, features of the machine, rules regarding use of numerals, spacing after punctuation marks and combination of letters. Course II involves study of the arrangement of business letters on the paper, how to make enclosures, how to direct envelopes and also how to copy from a rough draft. Course III includes the consideration of legal papers and the use of the tabulator. At the end of the semester's work, finger exercises are given. The text used is the Rational Typewriting.

#### Bookkeeping

*Equipment.*—The bookkeeping classes use a room 37x50 feet on the second floor of the high school building, specially designed for the work. The equipment is valued at about \$1,000, and includes:

- 56 desks and chairs
- 1 set banking fixtures
- 2 wall cases
- Miscellaneous equipment

No adding machines, filing cases or systems are included in the equipment.

*Courses.*—Bookkeeping I is the beginning course and includes the fundamental principles of bookkeeping. Miners' text is used. Bookkeeping II includes business practice work which familiarizes students with common business forms, special column books and business customs. Miners' text is used. Bookkeeping III considers local business customs and wholesale accounting. Lyons' Wholesale Accounting is the text used.

**Commercial Arithmetic**

*Course.*—The aim of the course in Commercial Arithmetic is to give the pupil a knowledge of the meaning of accuracy in numbers as well as the rules of arithmetic and their application. Short methods are used wherever possible. Rapid calculations and drills are a feature of the course.

**Commercial Law**

*Course.*—The purpose of the course is to enable the pupil to gain a knowledge of the laws that the business man is presumed to know, namely the laws that govern the making, operation and discharge of contracts, shipping, negotiable bills of exchange and promissory notes, and sale of property. The text used is *Essentials of Commercial Law*, by Whigam.

**Commercial English**

*Course.*—This course includes spelling, definition and use of words, principles of composition, review of grammar, letter writing, including letters of application, recommendation, introduction, buying, selling and friendly letters. The text used is *Business English and Correspondence*, by Davis and Lingham.

**Penmanship**

*Course.*—The purpose of the course in penmanship is to develop legible writers. The muscular movement is taught and attention is given to mastery of letter forms, slant and uniform spacing.

**Salesmanship**

*Course.*—The course in salesmanship was offered this year for the first time, and is designed to include the underlying principles of salesmanship. The text used is *Salesmanship and Business Efficiency*, by Knox.

**Part-Time Employment**

Pupils in the senior class are permitted and encouraged to take part-time employment for one-half of each day for about six weeks. Occasionally, employers pay a small fee for this work, but it is not part of the bargain. The instructors feel that this sort of employment is a valuable part of the business course, making possible some actual clerical work, bookkeeping or stenography. After returning from the job, the problems with which the worker



was confronted are made the basis of helpful class discussions. The faculty does not supervise the part-time work of the pupils, or know exactly what pupils are doing. Employers may be requested to render a report about the part-time worker, but no regular provision has as yet been made for this.

*Limitations of the commercial work.*—The outstanding limitations of the present provisions are: Identical courses for boys and girls, the absence of organized contact between the department and commercial life, the absence of content courses in commerce and the requirement of the completion of four years of work before the pupil is eligible for any sort of commercial position.

### Household Arts

*Household arts curriculum.*—The new household arts curriculum is as follows:

- A. For those who will attend college.
  1. In meeting the general requirements for graduation, the pupil must do the work outlined under the college preparatory curriculum and elect Household Arts and allied courses.
  2. The following work is suggested:
    - English, 3 years
    - Algebra, 1 year
    - Plane Geometry, 1 year
    - Domestic Science, 2 years
    - Domestic Art, 2 years
    - Latin or German, 2 years
    - American History, 1 year
    - Civics or Economics,  $\frac{1}{2}$  year
    - Science, 2 years
    - Electives (chosen with consent of teacher advisor).
- B. For those who will not attend college.
  1. The pupil must meet the general requirements for graduation, emphasizing Household Arts and allied courses.
  2. The following work is suggested:
    - English, 3 years (First Major)
    - Household Arts 3 or 4 years (Second Major)
    - Science 2 years (First Minor)
    - History, Mathematics, Foreign Language
    - Commercial, 2 years (Second Minor)
    - Electives (chosen with consent of teacher advisor).

*General organization and supervision.*—The courses in household arts are supervised by a high school domestic science teacher, who spends the major portion of her time in teaching. Prior to the adoption of the new course of May, 1916, all high school girls were required to take two semesters work in either domestic science or domestic art, with the exception that girls who take all the commercial courses may be excused upon the consent of the principal, from the year's work in household arts.

*Required or elective.*—All courses are elective, except as above noted. All the listed courses may be taken by a given pupil. Practically any course illustrated by the fact that in Cooking I, the beginning course, girls from each of the four years were enrolled.

*Courses, time allotment and enrollment.*—All courses are of one semester duration, meeting five times weekly for a sixty-five minute period.

TABLE 36

NUMBER OF GIRLS TAKING HOUSEHOLD ARTS COURSES  
HAVING EACH NUMBER OF CREDIT HOURS

COURSES	1 to 7 Credit Hours	8 to 15 Credit Hours	16 to 23 Credit Hours	24 to 32 Credit Hours
Cooking I (2 sections) . . . . .	12	2	2	1
Cooking II (3 sections) . . . . .	21	10	5	.....
Cooking III (not given 2nd semester) . . . . .	.....	.....	.....	.....
Cooking IV . . . . .	.....	2	2	10
Sewing I (2 sections) . . . . .	12	11	4	2
" II (2 sections) . . . . .	11	15	5	3
" III . . . . .	.....	3	.....	.....
" IV . . . . .	.....	.....	.....	.....
" V . . . . .	.....	.....	.....	10

*Future work of girls taking household arts courses.*—A total of 151 girls were enrolled in the second semester in the various Household Arts courses of these girls:

76 expect to go to college  
29 did not expect to go to college  
46 are undecided about going to college

Those indicating that they are going to college, plan to make their college major subject, as follows:

- 35 Undecided
- 12 Household Arts
- 4 Teaching
- 11 Music
- 3 English
- 3 Art
- 2 History
- 2 Language
- 1 Commercial Work
- 1 Elocution
- 1 Latin
- 1 Physical Training

As all girls were required to pursue two semester household arts courses, it cannot be concluded that the 151 elected this work the basis of preference.

#### Cooking Courses

*Equipment.*—Rooms for cooking classes are located on the first floor of the high school, and designed specially for the department.

The cooking laboratory is 30x34 feet, and contains an equipment valued at \$1,000. Among the equipment are the following:

- 1 kitchen range
- 1 refrigerator
- 1 china cupboard
- 3 supply cupboards
- 24 individual cooking equipments and stoves
- 4 sinks
- 2 laboratories
- 2 supply tables
- China and miscellaneous equipment

There is a kitchenette 11½x12 feet, which contains the following equipment, valued at \$125.

- 1 range
- 1 kitchen cabinet
- 1 zinc top table
- 1 porcelain sink
- General kitchen equipment

The dining room is  $13\frac{1}{2} \times 20$  feet and contains the following equipment, valued at \$250.

- 1 china closet
- 1 fumed oak dining table and six chairs
- 1 serving table
- 1 buffet
- 1 complete set dishes, glasses and silver
- 1 fibre rug, table and service linen

The pantry is  $10 \times 4\frac{1}{2}$  feet, and contains the general equipment for the kitchen.

*Courses.*—In course, Cooking II the principles of cookery are developed. Section I is devoted to experimental and applied cookery, including preparation of vegetables, fruits, cream soups, eggs, milk and milk products. The practical application of some principle is required each week in the home. One recitation a week is devoted to the relation of cookery to hygiene, including a study of respiration, digestion and circulation and food principles. Section 2 is a group of retarded students and little theory work is given. Markets and groceries are used as laboratories, for studying foods, and marketing. Food for the cafeteria is also prepared by this group.

Cooking II is a continuation of Course I and includes experimental and applied cooking in the making of breads, quick breads and preparing meats and left overs. Practical home application is required. Relation of cookery to hygiene is included and involves study of bones and muscles, excretory organs, the nervous system and personal hygiene. Principles of serving and planning menus are developed by planning and serving meals within certain cost prices. In Cooking I and II, the text is "Domestic Science" by P. S. Bailey.

Cooking III involves preparation of food, advanced and fancy cookery including cakes, cookies, pastry, salads, fish and deep fat cooking.

Cooking IV includes cost and purchase of food, dietetics, invalid cookery, diseases, care and feeding of children and household management. The text is "Bacteria, Yeasts and Molds in the Home," by W. H. Corn.

## Sewing

*Equipment.*—Sewing classes use a room on the first floor of the old high school, 23x27 feet, containing an equipment valued at about \$500. The equipment includes the following:

- 4 Singer sewing machines
- 1 White sewing machine
- 1 New Home sewing machine
- 5 large cutting and sewing tables and chairs
- 4 cupboards
- 14 dressmakers' squares
- 2 dozen rulers
- 1½ dozen scissors
- Miscellaneous equipment

There is also a fitting room 17x17½ feet, with an equipment valued at \$100. This includes:

- 1 mirror 2½x4 feet
- 1 dress stand
- 4 wardrobes.
- 2 cutting tables
- 2 dress forms
- 1 pressing board
- 1 electric iron
- Miscellaneous equipment

*Courses.*—Sewing I is designed to make the girl an intelligent consumer, to develop skill in construction and ability to appreciate a well made garment. The course covers a study of textiles, source of material and process of manufacture, hygiene in relation to underwear, sweat shop labor, and economics of the purchase of material. Projects are pincushion, sewing apron, drawers and shirts. The work includes hand sewing, machine sewing, drafting and cutting of patterns. No text is used.

Sewing II includes a study of linen and wool; history of spinning, weaving, dyeing; tests for adulteration; study of relative values of hand and machine made undergarments; the meaning of the Consumers League and the Union Label. Pupils are required to keep note books and an expense account of home and school expenditures. Projects are night dress, middy, corset cover, shirt waist, household furnishings and laces.

Sewing III, IV and V are advanced courses, continuing along the same general lines as previous courses. The textile study is

continued and attention is given to design and suitability of apparel in relation to use and cost. Projects are cotton or wool skirt, cotton dress, silk waist and graduation dress.

### The Night School

*General organization and administration.*—The night school is administered by the high school principal. The school term is divided into two semesters, falling this school year as follows:

First semester, October 5, 1915, to December 15, 1915.

Second semester, January 3, 1916, to March 1, 1916.

During each semester the school was in session from 7:30 a. m. to 9:30 p. m. The length of the period of recitation is ordinarily the single hour.

*Total enrollment and cost.*—There were enrolled in the first semester 224 men and 279 women, and in the second semester 174 men and 212 women. Twenty-two instructors were employed each semester, and the total cost of instruction for the respective semesters was \$970.50 and \$731.00.

*Courses.*—The courses given in the evening school of Richmond may be grouped under five general heads: Industrial, commercial, household arts, general and miscellaneous.

*Are the courses vocational?*—In considering whether or not certain courses are to be rated vocational, the course content and ages and occupations of students enrolled must be considered. According to the rulings of the State Board of Education, to receive state aid, attendance in trade extension evening courses must be restricted to those over 17 years of age and who are engaged by day in the trade which is the subject of the evening course. Evening courses in homemaking subjects may be attended by women wage-earners and housekeepers and still be rated as vocational.

On this basis, none of the industrial courses for men may be rated as vocational, because they were attended by men of various occupations. In no case were there over five men following by day the trade in which instruction was given. The commercial courses do not come under the provisions of the state vocational law. All the household arts courses come under the provision of the law, and were administered so as to be subject to the state aid. None of the general or miscellaneous courses come under the provisions of the law.

TABLE 37  
NIGHT SCHOOL INDUSTRIAL COURSES FOR MEN

	Mechanical Drawing	Bench Wood- working	Pattern Making	Machine Shop Work	Applied Electricity	Automobile Work
Number of classes.....	2	1	1	1	1	1
Number of recitations held.	22	22	22	22	22	22
Total number admitted....	30	20	19	7	18	37
Average number present....	8	11	11	5	10	22
Attendance—						
1-5 nights.....	5	3	5	2	4	3
6-10 nights.....	6	5	1	0	6	13
11-15 nights.....	10	5	7	0	2	8
16-20 nights.....	7	6	2	5	3	13
21-22 nights.....	2	1	4	0	3	0
	Draftsmen Clerks Electricians Machinist	5 Cabinet 4 makers 2 Laborers 1 Cobblers	4 3 Laborers 2 Printers	4 Machinists	4 Electricians	Automobile workers
					5	3

Occupations . . . . .	<p>Engineer Dry cleaner Carpenter Florist Sheet metal Unknown</p>	<p>1 Fireman 1 Clerk 1 Piano worker 1 Florist 1 Butcher 13 Unknown</p>	<p>1 Wood carvers 1 Clerk 1 Hatter 1 Unknown</p>	<p>2 Helper 1 Unknown 1 8</p>	<p>1 Machinist 2 Unknown</p>	<p>1 Car owners 1 Teacher Unknown 14</p>
Courses . . . . .	<p>Geometric construction. Projection. Architectural drawing.</p>	<p>Joinery and Cabinet work</p>	<p>Individual work.</p>	<p>Machine shop practice.</p>	<p>Storage battery; Motors. Dynamo. Text "Elementary Electricity" by Johnson.</p>	<p>Parts and accessories. Text "Automobile, Audel."</p>



Industrial Courses

From Table 37 it will be noted that none of the industrial courses are organized on a trade extension basis, and that the usual low percentage of attendance of enrolled students pertains in Richmond. No industrial courses were organized on a short-unit basis.

TABLE 38  
NIGHT SCHOOL COMMERCIAL COURSES FOR MEN AND WOMEN

	Typewriting	Stenography	Bookkeeping
Number of classes.	2	1	1
Number of recitations held. . . . .	22	22	22
Total number admitted. . . . .	43	31	23
Average number present. . . . .	27	17	14
Attendance—			
1- 5 nights. . . . .	13	10	0
6-10 nights. . . . .	16	4	10
11-15 nights. . . . .	12	3	5
16-20 nights. . . . .	10	7	6
21-22 nights. . . . .	2	7	2
Occupations. . . . .	Unknown 8	Clerks 3	Clerks 3
	At home 4	At home 2	Laborers 2
	Clerks 10	Laborers 4	Teacher 1
	Bookkeepers 6	Dressmaker 1	Bookkeepers 2
	Stenographers 6	Teacher 1	Stenographers 2
	Bakers 2	Piano Tuner 1	Milliner 1
	Dressmaker 1	Bookkeepers(f) 2	Salesman 1
	Laborers 4	Stenographer(f) 1	Dairyman 1
	Teacher 1	Dairyman 1	Unknown 10
	Piano Tuners 2	Baker 1	
	Dairyman 1	Unknown 14	
Courses. . . . .	Individual work, Text "Rational Typing."	First 9 lessons, Gregg's Manual.	Individual work, Text, "Bookkeeping," Moore & Miner.

	Sewing		Cooking	Serving	Millinery
	Elementary	Advanced			
Number of classes.....	1	1	2	1	2
Number of recitations held...	22	18	11	6	22
Total number admitted.....	22	41	52	8	54
Average number present.....	13	18	33	7	30
Attendance— 1-5 nights.....	7	17	17	6	4
6-10 nights.....	2	18	34	2	15
11-15 nights.....	5	4	1	0	24
16-20 nights.....	9	2	0	0	11
21-22 nights.....	3	.....	0	0	0
Occupations.....	At home Dressmakers 10 Factory workers 2 Stenographers 2 Unknown 6	20 4 2 1 4	At home 20 Maids 4 Clerks 4 Teachers 2 Dressmakers 2 Factory workers 2 Stenographer 1 Bookkeeper 1 Unknown 16	At home 6 Teachers 2	At home 11 Dressmakers 4 Milliners 2 Bookkeepers 2 Nurse 1 Unknown 34
Courses.....	Individual serving.		Study of breakfast and luncheon and preparation of meals.		Frames, Flowers, Hats.

**TABLE 40**  
**NIGHT SCHOOL GENERAL COURSES FOR MEN AND WOMEN**

	English		Spelling	Arithmetic	Writing
	Elementary	Advanced			
Number of classes.....	1	1	1	1	1
Number of recitations held.....	22	22	22	22	22
Total number admitted.....	14	29	25	24	64
Average present.....	10	13	Not reported	Not reported	Not reported
Attendance—					
1-5 nights.....	2	12	5	0	29
6-10 nights.....	3	7	6	6	13
11-15 nights.....	6	4	7	3	12
16-20 nights.....	3	6	5	11	8
20-22 nights.....	0	0	2	4	3

Occupations.....	Laborers Peddlers Piano workers	8 3 3	Dressmakers	2		Laborers	5
			Clerks	3	Clerks	3	
			Laborer	1	Cabinet makers	2	
			Draftsman	1	Machinist	1	
			Teacher	1	Dressmaker	1	
			Bookkeeper	1	Teacher	1	
			Stenographer	1	Tailor	1	
			Painter	1	Factory worker	1	
			Florist	1	Bookkeeper	1	
			Sheet metal	1	Stenographer	1	
Telegraph operator	1	Carpenter	1				
Unknown	15	Delivery boy	1				
			Sheet metal	1			
			Unknown	4			
Essentials in letter formation							
Course.....	English for Foreigners. Reading. Writing.	Essentials of English Drama.	Study and spelling of 600 words.	Processes in fundamental operations.			

#### **Commercial Courses**

The evening commercial courses were attended by office workers, factory hands, and housewives, as noted from Table 38. The percentage of attendance averages about the same as in the industrial courses.

#### **Household Arts Courses**

The facts of enrollment, attendance and occupation of students are reported in Table 39. The course in serving was on a short-unit basis, and it is significant to note the high percentage of attendance for the six nights.

#### **General Courses**

The general night school courses in English, spelling, arithmetic and writing, appealed to a large number of Richmond men and women, as will be noted from Table 40.

#### **Miscellaneous Courses**

The miscellaneous courses include physical training, Spanish and art. Attendance in the physical training and Spanish courses is unusually low. These facts will be noted from Table 41.

TABLE 41  
NIGHT SCHOOL MISCELLANEOUS COURSES FOR MEN AND WOMEN

	Physical Training for Women	Spanish	Art
Number of classes.	3	1	1
Number of recita- tions held.....	22	22	22
Total number en- rolled.....	100	19	18
Average number present.....	51	7	10
Attendance—			
1- 5 nights....	14	10	6
6-10 nights....	28	1	5
11-15 nights....	36	4	1
16-20 nights....	16	2	5
21-22 nights....	4	2	.....
Occupations.....	No information available	Machinist 1 Teacher 1 Clerk 1 Unknown 16	At home 5 Wheel stripers 2 Printer 1 Clerk 1 Telephone work 1 Machinist 1 Unknown 7
Courses.....	Elementary and advanced ex- ercises. Folk dances and drills.	Declensions. Conjugations. Simple reading. Pronunciation. "All Spanish Method." Hall.	Still life. Designing. Home decora- tion.



## CHAPTER XXVIII

---

### SURVEY COMMITTEE RECOMMENDATIONS FOR VOCATIONAL EDUCATION, FOR SUBSEQUENT INVESTIGATIONS AND FOR LEGISLATION

#### **Recommendations for Education**

##### **The Elementary Schools**

*Industrial and fine arts courses.*—The Survey Committee commends the Richmond schools for breaking away from the disciplinary, art craft and busy work approaches in the purpose and organization of the courses in industrial arts for the elementary schools. The Committee concurs in the spirit, purpose and organization of the course now being perfected, being in principle, an adaptation of the Speyer School Curriculum of Teachers' College, Columbia University. The broad foundation necessary for the appreciation and understanding of industrial and fine arts for all workers in the community, "regardless of sex and future vocation," must be laid in the elementary school. This course, if adequately developed, will accomplish the purpose.

*Knowledge of primal industries essential.*—That a common knowledge of the primal industries is required of all, "regardless of sex and future vocation," may be aptly illustrated in the field of textiles, by the findings of this Survey in its study of dry cleaning, laundry work, tailoring and dressmaking, mercantile selling and the work of the housewife. Those engaged in any phase of dry cleaning and laundry work, must have a thorough working knowledge of textiles and a general knowledge of garment construction, including the raw materials used, and dyeing and manufacturing processes. This same identical knowledge is needed by tailors and tailoresses, dressmakers and seamstresses. All salespersons in dry goods, general furnishings and drapery stores, where any kind of wearing apparel for men, women and children is sold, need the same information about raw materials, fabrics, dyes and garment construction in the daily work of making sales. The knowledge about textiles and garment construction which is essential and which has a wage value for cleaners, dressmakers and salespersons in the course of their work, has a value of equal worth to



the housewife in purchasing, cleaning, laundering and remodeling the clothing for the entire family. The same knowledge is equally vital for men in purchasing and caring for suits, shirts, underwear, neckties and other wearing apparel.

It is not to be assumed that all phases of the technical information required in the field of textiles of other primal industries can be taught in the first six grades. It is sufficient to here teach the simple fundamentals, relating them in so far as possible to history, art, geography and literature.

*Adequate provisions urged.*—The school authorities are urged to do all in their power to further the development of the industrial arts work by a sympathetic attitude, and by providing the necessary funds, reference books, materials and equipment. The Richmond schools should not assume that the Speyer Course in Industrial Art, adapted in some of its details for a particular school, should be copied in every minute detail in Richmond. Such changes should be made as seem essential to best meet local problems and conditions. It has seemed wise in Richmond for the sixth grade girls to pursue the more intensive courses in sewing and cooking. If this practice seems best for the future, the boys also should be permitted, if they desire, to take the cooking course; but, in all probability, the needs of the boys can only be adequately met by some form of shop work. This will necessitate the equipping of a room in each of the elementary schools for shop work. A specially equipped room is needed in doing certain phases of the industrial work in all the elementary grades. This being so, the room should be in almost constant use. The equipment should include a few movable woodworking benches, chairs, tables, blackboard, a few wood and metal working tools, and storage cabinets for materials used and work in process of construction.

*Platoon experiment approved.*—The Survey Committee heartily approves of the experiment proposed by the Superintendent of Schools, to organize one of the elementary schools on the platoon basis. The keeping of adequate records in the school organized on this basis, as well as in the other elementary schools, will make possible an evaluation of the two types of school organization.

#### **The Junior High School**

*Junior High School commended.*—The Survey Committee approves the proposal that the Garfield school be developed into a Junior High School, to include the pupils of the seventh, eighth

and ninth grades. The inadequacies of the present building are fully realized by the Richmond Board of Education and the Superintendent of Schools, and a new building in keeping with the character of the city and the needs of the pupils should be built at once. The recommendations of the Survey Committee relative to the school organization and lines of work adapted to Richmond needs, should receive careful attention in determining the size, arrangement of floor space and equipment of the new building.

*Cottage plan commended.*—The proposal of the Board of Education that one of the residences near the present site of the Garfield school, on property now owned by the school city, be retained and remodeled for the use of the household arts department, meets with hearty approval.

#### Principles of Organization

The following principles of organization and course outlines, are for the guidance of the Board of Education in developing the Junior High School.

*Organization.*—The Junior High School embraces the three years of school life immediately following the sixth grade. Its work is made up in part, of required subjects, common to all pupils, and in part of elective subjects from which a full program may be made. Beyond the sixth grade, pupils require some differentiation in work to meet the varying demands of individual interests, aptitudes and economic conditions. This desirable differentiation can not be made under the unified elementary school plan. All pupils are not ready at the beginning of the seventh grade for the full departmental organization and method of the usual high school. The Junior High School endeavors to organize the work of the seventh, eighth and ninth years, so that a gradual transition may be made. From the choice of a single elective subject from a number offered in the first year, the pupil makes a gradual adjustment through an increasing amount of elective work in the second and third years, until he is fully prepared for the more highly differentiated courses of the Senior High School, organized on a life career basis.

*Entrance.*—All pupils finishing the sixth grade may enter the Junior High School. Any pupils who have attained the age of thirteen or more years, at the opening of the fall session of school, and who have not completed the work of the sixth grade may be admitted to the Junior High School for full work, or in selected

subjects at the discretion of the principals and teachers in the Junior High School and the elementary school last attended by the pupil.

*Required subjects.*—The subjects that are required of all pupils as constants in the curriculum, should be those which are of fundamental, general value, regardless of the occupation to be followed. As well as providing some elements that make for practical efficiency, they should also provide for the preservation of health, the exercise of the duties and privileges of citizenship, and the wise and wholesome use of leisure.

*Elective subjects.*—Subjects offered as electives should be those which have appreciable identity with occupational activities, or with lines of interest leading to well-defined courses to which they are fundamental. Electives may be so chosen as to group the work about a life career motive in any one of the larger occupational fields; the professional or liberal arts group, the commercial, the industrial, or the agricultural. While home making is not included as a separate occupational or vocational field, it is assumed as of universal significance for girls, and household arts should be required as a part of their program, whatever their major line of occupational interest.

*Trying-out values of elective courses.*—All courses derived primarily from occupational activities should be regarded, in part, as trying-out or finding courses, and should be utilized fully for their vocational guidance values.

*Vocational values of elective courses.*—All courses derived from occupational activities should also be so developed as to have values directly basic to the respective vocations. Whatever is taught should be so taught that nothing must be unlearned, and whatever skills are developed, should be the same in kind as those required in the respective vocations, though less in degree.

*Limitations upon changing courses.*—While the testing of interests and aptitudes is a fundamental function of the Junior High School, adjustments should not be made on the basis of mere whim or caprice. No pupil should be permitted to drop a course once begun, until the end of the unit or term, unless failure and inaptitude are so marked as to indicate unquestioned waste of time.

*Modification of published curricula.*—For individual pupils with immediate needs, not provided by the subjects as organized in the curricula, adjustments should be made to the full extent of

administrative possibilities. The school exists for the pupil, not the pupil for the school. Flexibility and adaptability are the purpose and the virtue of the Junior High School plan of organization.

*New courses.*—Whenever any course not included among the electives is asked for by a number sufficiently large to make a class, such course should be offered, unless it is administratively impossible to do so.

*Promotion.*—Promotion should be by subjects, and failures in one subject or field should not be a cause for preventing progress in other subjects or fields. Poor work or failure in some subject, with good work in others, should be carefully weighed as factors in the guidance given in the selection of work and in the vocational field chosen.

*A grade or room teacher or advisor.*—While the Junior High School plan necessarily requires a large measure of departmental work, there should be an official, or grade, or room teacher, as advisor for each year, with general responsibility for the respective grade group, to give it solidarity, to co-ordinate its activities, and somewhat to centralize its supervision. All pupils in this period cannot adjust themselves fully to departmental organization. Co-ordination can not be left to any general plan, nor to even the most efficient principal, with duties as complex as those of the Junior High School.

*Co-operation in selecting electives.*—A brief plan of the Junior High School and its work should be sent to the parents or guardian of each child in the sixth grade, several weeks before the end of the school year. With this should go a blank form for the child's choice of elective work, to be signed by himself and the parent or guardian, and to be approved by the teacher or principal of the school from which he comes, and finally by the Junior High School principal or the official or grade teacher for the first year of the Junior High School. If pupil and parent are at all doubtful, a conference should be suggested with the teachers. If the teachers do not agree with pupils and parents, a conference of pupil, parents, and teachers should be called by the principal. On the opening of school, in the fall following, the choice as shown on the card filed, should be followed, unless reasons of weight make a change desirable. The planning of each following year's work, before the close of the current year, should be advantageous to the school in organizing its resources, and to pupils and parents in anticipating the values of further school attendance.

### The Courses of Study

The arrangement of work is on the basis of six fifty-minute periods each day, with an additional thirty minutes daily of unassigned time.

#### First year—Seventh Grade

Required Subjects:	Periods per week	Electives:	Periods per week
English.....	5	Latin.....	4
History.....	3	French.....	4
Geography.....	4	Spanish.....	4
Arithmetic.....	4	German.....	4
Industrial Arts, boys.....	4	Commercial Work.....	4
Household Arts, girls.....	4	Industrial Arts.....	4
Fine Arts.....	2	Household Arts.....	4
Music.....	2	Agriculture.....	4
Physical Education and Hy- giene.....	2		

#### Second Year—Eighth Grade

Required Subjects:	Periods per week	Electives:	Periods per week
English.....	4	Latin.....	4
History or Civics.....	3	French.....	4
Elementary Science.....	4	Spanish.....	4
Industrial Arts, boys.....	4	German.....	4
Household Arts, girls.....	4	Commercial Work.....	4 or 8
Music or Fine Arts.....	2	Industrial Arts.....	4 or 8
Physical Education.....	2	Household Arts.....	4 or 8
Study of Occupations.....	1	Agriculture.....	4 or 8
		Drawing and Design.....	4 or 8
		Music.....	2 or 4
		Mathematics.....	4

Third Year—Ninth Grade

Required Subjects:	Periods per week	Electives:	Periods per week
English.....	4	Latin.....	4
History or Civics.....	4	French.....	4
Geography or Science.....	4	Spanish.....	4
Physical Education and Hy- giene.....	2	German.....	4
Study of Occupations.....	1	Commercial Work.....	4 or 8
		Industrial Arts.....	4 or 8
		Household Arts.....	4 or 8
		Agriculture.....	4 or 8
		Drawing and Design.....	4 or 8
		Music.....	2 or 4
		Mathematics.....	4
		Science.....	4

Character of Work in the Several Subjects

*History.*—The history of the first year of the Junior High School, will depend much upon the work of the preceding grades. If in these, there has been a considerable amount of general history selected with reference to the important steps in human progress, then the work on the first year may well be given to American history. The second year may divide the work between American history and civics, and the third year give its time to some large unit of European history, or to carefully selected units in general history. If the work in the grades has been confined to American history, then the first year may be given to general history or a large unit of European history, to be followed by other units in the second year, giving one half of the third year to American history and civics, dwelling primarily upon the economic development of the United States and the social and political changes resulting from this economic development.

Much historical material should be included in the practical courses, dealing with their evolution and the social changes resulting from this evolution.

*Civics.*—While the civic problems connected with each occupation should be studied in its setting, a definite course in civics for one-half year should be given in the second or third year. The everyday problems of community life and the place of the citizen in sharing effectively these problems, local, state and national,

should be emphasized, rather than the mere machinery of government.

*Geography.*—The geography of the first year should deal largely with the economic interdependence of peoples, as determined by controls of location, climate, transportation, physical resources and labor resources. The selection of regions for study may depend much upon the work of earlier grades. Whatever the selection, the approach should be through the life of the immediate environment, then the larger environment as affected by conditions found in other parts of the world. Much geography should be included in the courses in practical arts and in history. In the third year, if geography is offered for a half-year or a year, the work may be physical geography in its economic bearings, or intensive industrial and commercial geography of the United States and its most important foreign trade relationships.

*Science.*—The elementary science of the second year may be made up of a study of the more important biological and physical problems, growing out of the work in practical arts, agriculture and the everyday environment. The work may be organized on a project basis or as short units. Each project or unit should be carried far enough to secure an understanding or knowledge of some biological or physical principle, as it is observed in further application. Laboratory apparatus and experimentation should be subordinated to a minimum. The environment, with its problems in the growth and care of plant and animal life, and in the use of physical principles in tools, machines and devices all about, should be the source of problems, materials and illustrations.

In the third year, a more systematic course in some one or two divisions of biological or physical science may be offered, but even here, the approach should be through problems of the environment which illustrate a need for the principles studied. While all work should be approached from situations having immediate, appreciable problems, it should be carried to a point which makes the information, principle, attitude, or habit, sufficiently clear and thorough through its development and application, to make it permanently significant as well as immediately usable.

*Mathematics.*—In the required course of the first year, the work should be largely practical or economic arithmetic—an application of processes to the solution of life problems in measurement of quantity and value. Many, indeed, most of the problems, may grow out of the work in practical arts, particularly as these

are studied from the standpoint of the consumer. The technical applications of mathematics in the constructive work in the practical and commercial arts, may be developed either in direct relationship as parts of these courses, or in parallel courses in units of a quarter or half-year. Shop mathematics, household accounting, and the arithmetic of marketing are examples of possible supplementary courses. For the liberal arts students, courses in elementary algebra and plane geometry should be offered as electives. The appropriate socializing of these courses is a desirable endeavor in adapting them to the Junior High School pupil.

*Industrial arts.*—For the required courses, an organization of short units in much variety should be provided, offering opportunity for participation in all typical lines of industrial work for acquaintance, the development of interest, and the testing of capacities and aptitudes. Units of projects in woodworking, sheet metal, founding, forging, machining, electrical construction, concrete construction, printing and perhaps some others should be included. Among the elective courses, more intensive courses, each covering one or more half-years, should be provided, the work to enter much more into the spirit and methods of industrial production.

*Household arts.*—The required work may offer more variety and be organized in shorter units than that of the elective courses. In the required courses, some work in foods and cookery, textiles and clothing, household furnishings, marketing, household accounts, interior design and decoration, house planning, household sanitation, laundrying and general housewifery should be included. In the elective courses, each unit may well cover at least a full half year's work. More emphasis upon training in technique should be placed upon the elective courses than upon the required units.

*Fine arts and drawing.*—Much of the work should grow out of the problems arising in the courses in the practical arts. All general principles should be approached through real motives calling for their use, and should be made general in their meaning by their further use in real problems requiring application, although a definite place for drill work in the development of technique may be required as part of the work. In the elective courses, units of one-half year or more may be devoted to special divisions of design, as furniture design, metal working design, costume design, com-



mercial design, and such other forms as occupational demands require. There may also be courses developed in the general principles of design, if demands arise for these. In the Junior High School, however, principles and applications should not be much separated.

Provision for elementary mechanical drawing should be made either in direct relationship to the practical courses requiring its usage, or in supplementary courses in appropriate units.

*Commercial work.*—The courses in commercial work should include a variety of units as large as the usual demands for various kinds of commercial employment. Not merely typewriting and stenography, but bookkeeping, accounting, filing systems, office practice, commercial forms, mercantile traffic, elementary commercial law, penmanship, and such other forms of work as are represented in the commercial world, should be included. Strong supplementary work in industrial and commercial geography and history should be offered. Care should be taken to avoid the too early development of specialized commercial technique, which might lead to premature entrance upon occupation.

*Agriculture.*—Such courses should be developed as the local situation suggests, keeping in mind the general aims and ends as determined by the best agricultural authorities of the state and the Department of Agriculture of the federal government.

*Study of occupations.*—One period each week devoted to a definite study of the varieties of occupations open to young people, the capacities and training required in each, the opportunities for advancement, the standards of life of the workers in each, the hazards in each, and various other questions which will lay before the pupil a basis for thought in the selection of his life work, may be made of very great value as a factor in the vocational and educational guidance of pupils.

### The Senior High School

#### Principles of Organization

*Types of vocational education needed.*—Through the detailed occupational analysis of the principal lines of employment in Richmond, and by means of conferences with groups of employers and employees, the need has been clearly discovered for specific day vocational education, of less than college grade, for industrial, commercial, agricultural and household employment. In addition

to the need for vocational education of less than college grade, indicated by this Survey, facts of school history showing the number of youths who enter college from the Richmond schools, indicate the need for preparatory education of a secondary grade, for young people whose specific vocational education for the professions will occur in the university or college.

*May a single school be adequate?*—These facts occasion this question of primal importance: "Can the needs of the college preparatory group requiring the major portion of time in a study of liberal arts, and the needs of the group requiring vocational education of less than college grade, in industry, commerce, agriculture and household arts, be adequately met in the same school?" Adequately meeting the needs of both groups means that the high school will have to become a vocational school in the broadest and best sense of the term: For the college preparatory group—a preparatory school offering the best possible preparatory courses for vocations requiring a college education; and for the other groups a vocational school, offering the best possible preparatory courses for occupations which do not require a college education.

*The democratic trend in Richmond.*—If the Richmond high school had been a distinctively classical institution throughout the years, it would be almost impossible for the school now to become democratic enough to meet the demands of both groups. Fortunately, however, the high school, particularly in the last few years, has seriously attempted to prepare boys and girls for wage earning as well as for college. This is indicated, in part, by the architecture of the building; by the splendid provisions for household arts work, and for commercial and industrial work; and, in part, by the evolution of the school curriculum, and the broadening attitude of the teachers regarding what education is worth while.

The new high school course of study adopted in May, 1916, places the entire school on a departmental and almost vocational basis. The school, of its own accord and by its own process of evolution, has thus become, in principle, what the Survey has indicated should occur in best meeting the needs of youths of Richmond. An extension and more liberal application of the principles to which the school is already committed, will permit the realization of the committee recommendations with but slight adaptation.

*Type of school recommended.*—With the development of the Junior High School, the student body of the Senior High School

will include those enrolled in the tenth, eleventh and twelfth years, as well as the students pursuing the various vocational courses, who may not be classified upon the year basis. It is recommended that the Senior High School be organized on a strictly life career basis, and that all work be either directly preparatory for other schools and courses, or immediately vocational. This will mean the elimination of all general industrial, commercial and household arts courses, and the organization of specific vocational courses in these and other fields. How this program may be carried out is indicated in the following paragraphs.

#### Principles of Organization

*Organization.*—The Senior High School embraces the three years of school life immediately following the ninth grade. Its work is made up of units of subject-matter necessary for preparation for the professions and college entrance, hereafter termed “liberal arts work,” and the units of subject-matter necessary for the best possible preparation for productive wage earning in industry, commerce, agriculture and household employment. With the completion of the work of the Junior High School as organized according to the recommendations outlined, the work of all students in the Senior High School must be clearly differentiated on the basis of vocational choice, individual interests and economic conditions. Most pupils are now ready to prepare intensely for the life career.

*Entrance.*—All pupils finishing the Junior High School may enter the Senior High School. Pupils who have attained the age of sixteen or more years at the opening of the fall session of school, and who have not completed the work of the Junior High School, may be admitted to the Senior High School for full work or in selected subjects at the discretion of the principal and teachers of the Senior and Junior High Schools.

All youths over fourteen years of age, who can with profit pursue the various vocational courses proposed, may be admitted to the respective courses.

*Required subjects.*—The only subjects required of those in the liberal arts group, are those specified as required by the specific college or college department, for which the pupil is preparing. The required subjects for those in the various vocational groups are the technical and related academic units agreed upon by the various advisory committees and the Vocational Division of the

State  
efficien  
student  
-senti  
period  
E  
-ce

State Department of Public Instruction, as essential for vocational efficiency. Physical training and music should be required of all students. For all girls in the school, at least one year's work in the essentials of homemaking, which can be taught in the secondary period, is required.

*Elective subjects.*—For the liberal arts group, after provision has been made in the program for the required subjects, all other courses may be elected upon the basis of the students' interests and capacities.

*Changing enrollment in courses and departments.*—The testing of interests and aptitudes is one of the primal functions of the Junior High School, and it is supposed that most pupils, upon completing the work outlined for this period, will have rather well defined vocational choices. Doubtless for some pupils, however, the period of adjustment will not have been completed upon entering the Senior High School. For such pupils, necessary shifting from course to course must be possible.

*Organization of vocational courses.*—All vocational courses proposed are to be organized on the basis of principles adopted by the Vocational Division of the State Department of Public Instruction. While the Survey has indicated the immediate need for certain day vocational courses, the school must be constantly on the alert to discover needs, and to adapt itself to all types of pupils requiring any phase of vocational instruction. For each vocational course offered, an advisory committee composed of men from the vocation and the schools, should be formed. The teacher must not be a theorist, but one skilled in the art, craft, science or commercial branch, which he proposes to teach. All vocational courses are to be so organized that a pupil having one, two or three years in which to remain in school, can spend the first, second and third year in such a way as to be of most immediate and future profit.

*Administration of vocational courses.*—Vocational courses and departments should be directed and supervised according to a scheme worked out jointly with the Richmond Board of Education and the Vocational Division of the State Department of Public Instruction.

#### The Courses of Study

Considering the varying standards involved in college entrance requirements, and the specific preparation for wage-earning effi-

ciency in the industrial, commercial, agricultural and household employment fields, it is unwise and impossible to outline in detail either the liberal arts or vocational courses. The following statements and outlines are to be considered as suggestions, indicating the possible method of organization.

*Liberal arts group.*—As the entrance requirements of colleges vary so greatly, it is advisable that the student make up his mind about the college which he wishes to enter, as soon as possible.

The full three years' course for those in this group may be made up wholly from the studies below enumerated, or in part from those there enumerated, in combination with subjects from the vocational groups.

English	Mechanical Drawing	Chemistry
Mathematics	Economics	Household Arts
Latin	Botany	Physical Training
German	Zoology	Orchestra
History	Physics	Chorus Practice
Civics	Physiography	Fine Arts

*Vocational industrial group.*—The Survey Committee does not concur with the principle and accepted practice that the general industrial arts courses now taught in the high schools are valuable as a preparation for engineering and other technical courses. The general industrial courses recommended for the Junior High School will adequately meet the need of the prospective engineer for tool process work. In his college preparatory period, the future engineer should spend much of his time developing abstract thinking ability derived from the appropriate study of mathematics and the physical sciences.

There is an immediate need for trade preparatory vocational courses in printing, patternmaking, work of machinists, foremen, moulders, draughtsmen and trade dressmaking. These courses, organized on a strictly vocational basis, should take the place of the present general industrial courses.

Preparatory work for other trades not enumerated should be offered as soon as the need can be ascertained. The course for each trade consists of one-half of each day in trade manipulation work, and the other half in related drawing, academic, science and occupational studies.

*Vocational commercial group.*—The Survey Committee recommends that commercial courses be differentiated for boys and

girls; that, in addition to the courses now offered, provision be made for mercantile traffic and transportation, mercantile sales and general office practice; that the work in stenography and typewriting be more intensive, covering a shorter period of time, and that the present bookkeeping courses be considerably shortened for all except those who expect to become expert accountants and cost estimators. The committee commends the present practice of arranging part-time office employment for commercial students.

Courses for Boys	Courses for Girls
Stenography	Stenography
Typewriting	Typewriting
Bookkeeping	Bookkeeping
Accountancy	Commercial Arithmetic
Commercial Arithmetic	Penmanship
Office Procedure	Mercantile Sales
Penmanship	Vocational Information
Mercantile Traffic	
Transportation	
Mercantile Sales	
Industrial History and Economics	
Vocational Information	

*Vocational agricultural group.*—If a group of students of sufficient size desire work in vocational agriculture the necessary courses should be offered. In view of the findings of the Survey, the agricultural work should be along the line of general farming, horticulture and floriculture, providing for practical work, laboratory work, related science and academic work, and electives.

The projected plan for school and home gardening work for Senior High School pupils described in Chapter XXVI, "Home and School Gardening," is an organic part of the vocational agricultural department here recommended.

*Household arts group.*—The Survey Committee recommends that provision be made for the preparatory courses for prospective graduate and practical nurses, indicated in Chapter XXII, "The Graduate, Practical and Home Nurse," that the present "general sewing courses" be modified to constitute trade preparation for seamstresses and dressmakers (this recommendation is made, because the best preparation for the trade is also the best preparation for the housewife and consumer); that specific pro-

vision be made for study of all the phases of the work of the housewife outlined in the study of the Housewife of this Survey, including marketing, house planning, health preservation, sanitation and care of children and the sick.

*Household employment group.*—In keeping with the recommendation of the Survey Committee reported at the close of Chapter XXIII, "Household Service," the Senior High School should offer preparatory courses for household and institutional services as soon as employers and employed reach a just and workable decision about hours of work, remuneration and education needed for entrance, proficiency and promotion.

If there is a group of girls in the Senior High School desiring to become practical nurses, the preparatory courses in cooking, science, physiology, and care of the sick should be offered, as indicated at the close of Chapter XXII "The Graduate, Practical and Home Nurse."

#### The Night School

The Richmond night school has been earnestly seeking to meet the educational needs of men and women in all types of employment in the city. The school has discovered the need for general courses in reading, writing and arithmetic, recreation, play, music and art, as well as for vocational courses related to industrial, commercial, household and agricultural occupations. The general courses mentioned, as well as the courses in recreation, music and art, should be continued and supplemented as needs arise.

The night school director is to be commended for his splendid system of cost accounting and record keeping.

#### Principles of Organization

*Administration.*—For each industrial, commercial and household vocational course offered, the standard principles of organization adopted by the State Board of Education should be followed. An advisory committee should be formed for each course, attendance should be limited to those over seventeen years of age, who work by day in the occupation which is the subject for evening instruction, and the class should be taught by one skilled in all the various phases of the occupation, from both a theoretical and a practical standpoint.

*Centralization and decentralization.*—At present, all evening classes meet in the high school building. This practice should continue for courses in industry and commerce, where the specialized equipment of the high school is needed. Courses for housewives and practical nurses, in homemaking and nursing subjects, and courses in reading, English, spelling, etc., open to all adults, should be offered in those parts of the city most accessible to those desirous of pursuing the courses.

*Semester and short unit courses.*—To date, all courses have been offered on either a one or two semester basis, with the usual high percentage of absence and mortality. Many of the trade extension courses recommended, should be organized on a short unit basis; for example, applied electricity for employers in automobile factories, where three units are recommended: 1, wiring; 2, batteries; and 3, ignition. General courses in reading, spelling, etc., might well be administered on a semester unit basis.

*University co-operation.*—For the trade extension courses recommended in industry and commerce, which will have to be conducted by the extension divisions of the State Universities, the Richmond Board of Education should co-operate by providing necessary rooms, equipment, light and janitor service.

*The courses recommended.*—The detailed recommendations for night school courses are reported at the conclusion of each occupation analysis in Part II, "Occupational Information." For the reader's convenience, however, a list of the proper courses follows in the subsequent paragraphs:

#### Industrial Courses

##### Automobile factory employees

Wiring: Dash Instruments  
Batteries  
Lights  
Ignition

Storage battery:  
Battery theory  
Charging  
Care  
Use in ignition  
Use in lighting  
Use in gear shifting



**Ignition:**

- Types
- Installation
- Magneto
- Battery
- Distributors

**Metal machine operators**

- Machine operating (all types of machines used in ordinary shops)
- Blue print reading
- Trade mathematics

**Machinists**

- Machine shop practice
- Draughting
- Blue print reading
- Trade mathematics

**Tool makers and blacksmiths**

- Metallurgy
- Hardening, tempering and grinding
- Blue print reading

**Sheet metal workers**

- Drafting
- Lay out
- Trade mathematics

**Moulders and foremen**

- Sand mixtures
- Metallurgy
- New foundry methods

**Wood machine operators**

- Woods
- Plan reading
- Machine operating
- Tool filing and grinding

**Cabinet makers, benchmen and assemblers**

- Plan reading
- Wood finishing
- Drafting
- Trade mathematics
- Cabinet shop practice

**Printers' apprentices**

- Composing
- Makeup and imposition
- Design
- Type faces
- Spelling
- Punctuation

- Building contractors
  - Material estimating
  - Plan reading
  - Drafting
  - Building construction
  - Contracts
  - Building specifications
- Carpenters
  - Stair and roof construction
  - Plan reading
  - Architectural drafting
  - Trade mathematics
  - Material estimating
- Plumbers
  - Material estimating
  - Building construction
  - Trade physics and chemistry
  - Laws and building codes
- Ladies tailors, dressmakers and seamstresses
  - Tailoring
  - Textiles
  - Designing
  - Cutting
  - Pattern drafting
- Dry cleaners, proprietors and spotters
  - (University Extension Courses)
  - Textiles
  - Dyes
  - Garment construction
  - Trade chemistry
- Laundry proprietors and washers
  - (University Extension Courses)
  - Textiles
  - Dyes
  - Chemistry: waters, soaps and starches

#### Commercial Courses

- Telephone operators
  - Recreation—High School Gymnasium
- Office workers
  - Advanced bookkeeping
  - Accountancy
  - Stenography
  - Typewriting
  - Business English
  - Business arithmetic
  - Office procedure and practice

**Salespersons**

- (Grouped on basis of goods sold)
- Study of stock
- Manufacturing processes
- Store procedure
- Economics
  - World's producing and selling markets
  - Price setting
  - Wholesaling and retailing

**Store proprietors**

- (Grouped on basis of goods sold)
- (University Extension Course)
- Business methods
- Advertising
- Accountancy
- Practical economics
- Mercantile traffic

**Shipping clerks, receiving clerks, traffic men, store and factory proprietors**

- (University Extension Course)
- Mercantile traffic

**Housewives**

- Nursing
- Care and feeding of children
- Dietetics
- Home furnishing
- Sanitation
- Community housekeeping

**Practical nurses**

- Nursing
- Care and feeding of children
- Dietetics
- Sanitation

**Recommendations for Subsequent Investigations**

Of the great number of social and educational problems raised by the Survey which require further investigation, those of most immediate importance are: Practical nursing, mercantile traffic, mercantile sales, and the public library.

*Practical nursing.*—The Survey of Richmond revealed the fact that there are a large number of untrained women engaged in nursing, taking all types of cases, from the simplest to the most critical. The work of the physician and trained nurse is, in part, under social control. The next step is to bring the practical nurse within the jurisdiction of the state, indicating the required train-

ing, form and registration and types of cases which she may attend. This problem is referred to the State Board of Health, with the earnest request that studies of practical nursing, similar to the one here made, be undertaken in other parts of Indiana, to determine the scope of the problem, the necessary legislation, and the educational facilities needed to place this work on a socially sound basis.

*Mercantile traffic.*—The Richmond Survey of mercantile traffic indicates a large and important field offering promising commercial employment, about which little is known. The Richmond study considers primarily steam railroad traffic positions. Detailed studies should be made of the work of express companies, post office, interurban railroads, auto express lines, and merchants' delivery systems, in order that courses may be developed in commercial departments, looking toward traffic employment.

The whole field of passenger traffic should also be adequately studied.

*Mercantile sales.*—The real problems in training for salesmanship have been obscured by vaporous books on personality and conduct, and by the acceptance of the department store unit as the basis for study and training. There are three questions of outstanding importance.

1. What preparatory courses in salesmanship may be given youths (boys as well as girls) prior to their employment as salespersons? Answering this question will involve a much more detailed study of specialty stores than has been made to date, from the standpoint of constant and variable factors, knowledge of stock, store procedure, etc.

2. On what basis may salespersons be grouped for evening continuation courses in salesmanship?

3. What training is necessary for the sales agent, the broker, the insurance agent, the real estate salesman and the traveling salesman? Answering this question will involve detailed analysis of the respective lines of work. Considering the large number of men employed in these lines, such an investigation should prove most fruitful.

*The public library.*—The public library may be one of the most potent factors in vocational education for adults. There is a singular dirth of reading matter—trade journals, periodicals and books relative to occupations in the Richmond Library. Workers in Richmond have indicated to the Survey staff that they have

repeatedly searched for literature in the library which would throw light on some new trade process or machine. Workers themselves, are eagerly seeking occupational literature. This should be supplied. Then, too, the library has a direct responsibility for supplying the literature descriptive of new processes, methods, etc., of which factory and store proprietors and employers are as yet ignorant. The library may be a forerunner of progress. With the examples of the splendid results achieved by the Cleveland and Newark library in supplying occupational information to all types of workers, we are assured that the library has a large and important function in this field. Just how this function may be best discharged is as yet undetermined. A detailed study should be made of this important problem.

### **Recommendations for Legislation**

As a result of the findings about the character and problems of juvenile employment, the Survey Committee recommends to the State Legislature the following additions to the Indiana Vocational Law:

1. That the establishment of part-time classes be mandatory upon all Boards of Education of towns of 5,000 population and over.
2. That attendance of all boys and girls under 18 years of age, who have left school and entered any type of profitable employment, be required for at least five hours each week during the regular school year.
3. That in addition to the provisions for part-time education complementary to daily employment, part-time education be also provided through continuation schools for all youthful workers who are at work in juvenile employment, regardless of whether it is complementary to the daily employment.

The committee also recommends the following amendment to the Child Labor Laws:

That working permits be required for all types of employment for all youths under sixteen years of age, including those engaged in farm work, any form of domestic or personal service, or any other employment.

**PART FOUR**  
**METHODS OF THE SURVEY**



## CHAPTER XXIX

---

### METHODS OF THE SURVEY AND FORMS USED

The general purpose, plan, and organization of the Survey has been set forth in Chapter I, "The Survey." In this chapter some forms and blanks used are reproduced, and such comments are appended as may be necessary to convey to the reader the general methods used in gathering and classifying data. Only the more important forms are reproduced, but interested readers may obtain copies of those not reproduced by addressing R. J. Leonard, Indiana University, Bloomington, Indiana.

#### Occupations and Number Employed

*The occupational census.*—The first preliminary data relative to occupations which are required are an enumeration of the principal lines of industry and commerce and the number of workers employed in each. The United States census is the usual source for such data. The census, however, does not report these facts for cities the size of Richmond. The first step in the Survey was, therefore, the taking of the occupational census.

For this purpose two blanks were used, one for reporting the occupations of all employees and the other for reporting the work of boys and girls under seventeen years of age, and the opportunities for part-time employment. The list of employers was prepared from the telephone directory and included all employers in the city—professional, commercial, trade, transportation, agricultural and industrial. Three days before these blanks were mailed a circular letter was sent to all employers by the Commercial Club. This letter here follows, after which follow the census blanks:

March 6, 1916.

To Proprietors and Managers of Establishments,  
Richmond, Indiana.

Dear Sir:

The Commercial Club of Richmond and the Richmond Board of Education have been instrumental in perfecting plans for the Vocational Education Survey of the City. This Survey is now in



progress and is being conducted by a corps of expert workers who are making a careful study of all phases of commercial, industrial and domestic employment in Richmond.

The success of the Survey depends upon the earnest co-operation of proprietors of stores, shops and factories as well as those employed in the various occupations in Richmond. You are urged to fill out promptly and carefully all blanks sent you by the Survey, and to extend a hearty welcome to members of the Survey Staff when they visit your establishment to study the requirements of various occupations.

The findings of the Survey will be used by the Board of Education in determining the types of day and evening vocational courses best adapted to the needs of Richmond. All information given will be considered confidential and will be used only for educational purposes.

Very truly yours,

GEO. H. KNOLLENBERG,

R. L. KELLY,

S. E. SMITH,

H. R. ROBINSON,

W. Z. CARR,

JONAS GAAR,

DWIGHT E. YOUNG.

Committee on Education.



**Remarks:**

### **Type Studies**

All occupational analyses were made upon the basis of type studies in those fields where many establishments or workers were represented. Thus, in the automobile industry, no attempt was made to carefully analyze the processes in the four plants. A detailed and careful analysis was made in one plant and the descriptions thus obtained were referred to the other plants for verification and additions. Each field worker was provided with a loose leaf notebook for recording facts obtained by conference, observation or questioning. As a guide in making observations and directing questions each field worker was provided with a schedule, of which several types are here reproduced.

#### **Schedule for Industrial and Commercial Type Studies**

- I. Organization of establishment
  1. Enumeration of departments
  2. Enumeration of occupations
  3. Establishment routine and general facts
- II. Analysis of occupations (by departments)
  1. What the worker does
    - General description of work
    - Materials handled
    - Machines; names; set up; operate; repairs (adjust)
    - Range of work
    - Receiving orders—reporting work done
  2. Mental and physical requirements
    - Height, weight, strength, discrimination (ability)
  3. General knowledge required for entrance, for efficiency, for promotion
    - General education desired
    - Elementary school; high school
  4. Common deficiencies of workers
    - Educational and personal
  5. Special knowledge required
  6. Skill required
    - How much prerequisite technical education
  7. Can special knowledge or skill be obtained on job
    - By specific instruction
    - Period of apprenticeship

- ### Schedule for Dressmaking Type Study

- I. Organization of establishment
  1. Name and address
  2. Workers employed and occupation of each
  3. Sewing done at own home, home of employer, or shop
- II. Description of work
  1. Kinds of garments made
    - Shopping
    - Designing; drafting of patterns; cutting; fitting; draping; finishing
    - Alterations done; making over
    - Machines used and tools
    - Managing business
  2. Mental, physical and personal requirements
  3. General education required      Desired

4. In what respect does the employer feel she or her helpers are deficient
5. Special knowledge required Desired (Textiles, prices, patterns)
6. Special skill required
7. Can special knowledge or skill be obtained on job  
Apprenticeship Length of time Specify special courses taken
8. Promotion Another position Increased business, increased pay
9. Source of workers (employees only) Promotion Advertisement Application Recommendation
10. How selected (for employees only)
11. Working hours  
Week day from.....to.....  
Saturday from.....to.....  
Busy season.....weeks idle 1915.....
12. Working conditions  
Special strains Light Artificial and day Ventilation
13. Wages or approximate yearly earnings

#### Schedule for Housewife Type Study

- I. Composition of household
  1. Name Address
  2. Number in family Sex and ages under 18
  3. House, apartment, rent, buying, own. Number of rooms Number of stories Number of apartments in building
  4. Do you keep a maid Do you entertain much Outside activities as clubs, church work, etc.
  5. Occupation and place of employment of wage earners of family. Husband, sons, daughters, housewife, herself, by boarders, roomers, sewing, baking, laundry work, etc.
- II. Housing
  1. Selection of neighborhood. Smoke, dust, character of neighborhood, altitude, drainage, lack of congestion, near school and work  
Selection of house, stone, brick, light  
House in plan, good, bad

2. Furnishings Bought all at once or occasionally  
Bought for whole house or one room  
What color scheme is desired downstairs; upstairs  
How is color suited to location of room  
Basis of selecting draperies Furniture, paper, pictures (beauty, style, color, utility, harmony)
3. Sanitation Is drainage good If not, why  
Modern plumbing  
How is house kept free from ants, moths, mice, bed bugs, water bugs, cockroaches, etc.  
What disinfectants are used for toilet, sink, etc.  
Do you read meter Is garbage disposal satisfactory
4. Ventilation  
How is air in house kept fresh Day, night
5. What is heating system Good points, bad points  
Moisture secured  
How much attention is required What fuel  
What is used for cooking
6. Lighting Why was system selected Is service satisfactory

### III. Food

1. Prepared foods used Bakery goods, breakfast foods  
canned fruits and vegetables, pickles
2. How is balanced diet secured Illustrate by menu
3. Buying Local, downtown, mail, order, what is bought  
in quantity, who selects, personal, phone, other  
How far ahead; cash or charge account  
Do you keep a refrigerator Plenty of storage space
4. How much canning and preserving is done Fruits,  
vegetables, pickles, jellies, etc.
5. Gardening, poultry
6. How learned

### IV. Clothing

1. Amount, and kind bought ready made
2. Amount and kind made by members of family Seamstress Dressmaker
3. Amount of mending; remodeling
4. Amount of millinery and fancy work
5. Seasonal care of clothing

6. Method of learning sewing Distinguishing fabrics
7. Further training desired

V. Care and Training of Children

1. Feeding infants and other children. Milk Special foods Modification of milk Sterilization of bottle Adapting feeding to growth of child Instruction in personal hygiene
2. Clothing Style Material Amount needed
3. Study and application of kindergarten methods and child psychology
4. Assistance in school work School visiting
5. Teaching children anything other than housework
6. Housework taught girl Boy Trace progress
7. Courses desired

VI. Home nursing

1. How much actual nursing is done
2. Knowledge of invalid cookery
3. Use of disinfectants, antiseptics
4. First-aid measures
5. Detection of contagious diseases
6. General care of patient Bed room, ventilation, bathing, medicine, taking temperature
7. What home remedies, patent remedies

VII. Household management Accounting

1. Hours of each day occupied by daily work Sweeping, dusting, care of children  
Special work for each day, washing, etc.
2. How far ahead are meals planned When  
Number of courses, dinner hour  
How far ahead is buying done
3. Laundry work Method used, sanitation  
Methods of removing stains, spots  
Help employed
4. House cleaning Time of year, length of time, help employed
5. Labor saving devices used in housework
6. Who has charge of money spending Method of meeting household expenses e. g., A regular allowance



7. Is there a separate budget made    What is any apportionment for food, clothing, rent, etc.
8. How do you keep account of money spent    Regular books kept

VIII. Education of housewife

1. Extent of general education.    Where obtained
2. Special courses taken.    Where obtained
3. Helps used    Cookbooks, magazines
4. What course in domestic work would be most helpful
5. What would be most convenient

**Schedule for Type Study of Practical Nursing**

**Physician's Blank (Practical Nurse)**

- I. Identification
  1. Name of nurse    Address
  2. Name of doctor    Address
- II. Nature of Work
  1. Type of cases taken    Obstetrical    Surgical    Old people    Diseases (in detail)
  2. Care of patient  
    Cooking for patient    What types of special diet  
    Care of room    Cleaning    Ventilation    Disinfectants  
    Bathing    Giving medicine    Taking temperature  
    General care of patient    Antiseptics    Care of bed  
    Bandaging  
    What occasions for knowledge of first-aid measures
  3. How much assistance from members of family or others
  4. What other work besides nursing is done on a "case"  
    General housework    Cooking for family    Sewing
- III. Physical, mental and personal requirements
- IV. General education required    Why  
    General education desired    Why
- V. Deficiencies of nurse
  1. General education
  2. Special knowledge of the work (specify in detail—  
    cookery, care of room, care of patient)
  3. Skill
- VI. Special knowledge required
  1. Cookery    Dietetics
  2. Care of sick room    Ventilation    Disinfectants

3. General care of patient Bed, bathing, medicine, taking temperature, bandaging, antiseptics
4. First-aid measures Emergency measures
5. Medical terms
6. Physiology Anatomy Hygiene
- VII. Skill required
  1. Cooking
  2. General care of room
  3. General care of patient
- VIII. How is knowledge and skill acquired
  1. Experience at home
  2. Experience on job
  3. Instruction from doctor
  4. Length of time required
- IX. Promotion
  1. To better wages
  2. To more frequent work
- X. Source of workers
  1. Application Advertisement Recommendation
  2. By doctor By family
- XI. How selected Trial
- XII. Working hours and wages
  1. What time for rest Hours per day
  2. Seasonableness of work
  3. Wages
- XIII. Working conditions
  1. Inconveniences
  2. Special strains
  3. Special dangers
- XIV. Educational inferences
  1. Should there be training in nursing in high school
  2. Of what should such work consist
  3. Should there be lectures and demonstrations on nursing in evening school
  4. Could a high school graduate take up practical nursing immediately

**Employees Blank (Practical Nurse)**

- I. Identification
  - 1. Name of nurse Address
  - 2. Name of employer Address
  - 3. Number in family
- II. Nature of work
  - 1. Type of case
  - 2. Care of patient
    - Cooking for patient What types of special diet
    - Care of room Cleaning, ventilation, disinfectants, bathing, giving medicine, taking temperature
    - General care of patient Antiseptics, care of bed, bandaging
    - What occasions for knowledge of first-aid measures
  - 3. How much assistance from members of family or others
  - 4. What other work besides nursing is done on a "case?"
- III. Physical, mental and personal requirements
- IV. General education required Why
  - General education desired Why
- V. Deficiencies of nurse
  - 1. General education
  - 2. Specific knowledge of the work (specify in detail cookery, care of room, care of patient)
  - 3. Skill
- VI. Special knowledge required
  - 1. Cookery Dietetics
  - 2. Care of sick room Ventilation Disinfectants
  - 3. General care of patient Bed, bathing, medicine, taking temperature, bandaging, antiseptics
  - 4. First-aid measures Emergency measures
  - 5. Medical terms
  - 6. Physiology, anatomy, hygiene
- VII. Skill required
  - 1. Cooking
  - 2. General care of room
  - 3. General care of patient

- VIII. How is knowledge and skill acquired
  - 1. Experience at home
  - 2. Experience on job
  - 3. Instruction from doctor
  - 4. Length of time required
- IX. Promotion
  - 1. To better wage
  - 2. To more frequent work
- X. Source of workers
  - 1. Application Advertisement Recommendation
  - 2. By doctor By family
- XI. How selected Trial
- XII. Working hours and wages
  - 1. What time for rest Hours per day
  - 2. Seasonableness of work
  - 3. Wages
- XIII. Working conditions
  - 1. Inconveniences
  - 2. Special strains
  - 3. Special dangers

**Nurses Blank (Practical Nurse)**

- I. Identification
  - 1. Name Address
  - 2. Sex Age Single Married Widowed
  - 3. Place of birth
  - 4. Name of employers
  - 5. Names of doctors worked with
- II. Nature of work
  - 1. Type of cases taken Obstetrical Surgical  
Old people Diseases (in detail)
  - 2. Care of patient  
Cooking for patient What types of special diet  
Care of room Cleaning, ventilation, disinfectants,  
bathing, giving medicine, taking temperature  
General care of patient Antiseptics, care of bed,  
bandaging  
What occasions for knowledge of first-aid measures

3. What assistance from members of family or others
4. What other work besides nursing is done on a "case"  
(General housework, cooking for family, sewing)

III. Methods of learning nursing

1. Experience at home What home experiences contributed to knowledge
2. Experience on the job
3. Instruction from doctor on the case
4. Special school courses
5. Books, magazines, etc.
6. What special courses desired When

IV. General education of nurse

1. Grade reached in school in Richmond Elsewhere (a)  
Age
2. What education is necessary Desirable
3. How old

V. Working hours and wages

1. Hours per day Per night Hours for rest
2. Number of cases 1915
3. Number of weeks idle 1915 Busy seasons
4. Wages Per hour Per case Per week

VI. Working conditions

1. Amount of night and day work
2. Living conditions Room; size, light, heat
3. Conveniences; modern plumbing, etc.
4. What special strains
5. What dangers to health

**Schedule for Type Study of Domestic Service and Day Work**

I. Composition of household

1. Name and address of employer
2. Number in family Sex and age under 18
3. What other help employed
4. Name, address, date, color, nationality

II. Analysis of occupations

1. What the worker does  
Independently  
Supervised or helped by others  
Machines used

2. Physical, mental and personal requirements  
Height, weight, strength, judgment, executive,  
attitude toward work, honesty
3. General education required  
General education desired
4. Common deficiencies of workers  
Educational, personal, deficiencies of skill
5. Special knowledge required  
Marketing, dietetics, textiles, household manage-  
ment, care of children
6. Skill required  
Cooking, cleaning, sewing; care of children
7. Can special skill be obtained on job  
Specific instruction  
How long does it take an experienced worker to  
learn the work; an inexperienced Method of  
teaching
8. Promotion  
How far possible in establishment Of what does it  
consist  
Responsibility Wage  
How far obtained by changing job Factors con-  
ditioning promotion Will increased efficiency  
raise wages
9. Source of workers  
Promotion, ads, recommendation, application
10. Method of selection  
Interview, trial, test
11. Working hours  
Amount and occasion overtime work, company time  
of arrival and time of leaving  
Payment for overtime work  
Seasonableness of work, as house cleaning, moving,  
sickness, canning  
Hours off
12. Working conditions and living accommodations  
Convenience and labor saving devices  
Light, ventilation, sit or stand  
Provisions for eating, whether with family or alone  
Room; size, heat, light and furnishings, own room;  
social opportunities
13. Wages  
Include room and board, clothes, etc.

### RICHMOND VOCATIONAL EDUCATION INQUIRY

Will you kindly furnish, today, the information requested below? It will be of great service to us in the Vocational Education Survey of Richmond, which we are conducting to guide us in the establishment of the right kind of vocational courses for the girls and women of this city. It will also furnish information on the number and occupations of the wage earning women in Richmond. One report from each family is sufficient. This courtesy will be appreciated.

J. T. GILES, Supt. of Schools.

KIND OF WORK DONE	NAME OF WORKER	HOME ADDRESS	EMPLOYED		Room or Board in Your Home		COLORED  NATIONAL- ITY
			Regular- ly	Occasio- nally	Yes	No	
Housekeeper . . . . .							
General Housework . . . . .							
Caring for Children . . . . .							
Washing and Ironing . . . . .							
Sweeping & Cleaning . . . . .							
Catering . . . . .							
Sewing . . . . .							
Tending Furnace . . . . .							

Name of Family . . . . . Address . . . . .  
 Please List below Women or Girls and Men and Boys Employed by the Hour, Day, Week or Month in Various Lines of Home Work.

Schedule for Home Gardening Study

INDIVIDUAL HOME.

Date..... 191..... Name of town or city..... School or school district.....  
 Name..... Street..... No.....  
 White or colored..... Owns or rents.....  
 Type of house (whether with or without lots, whether apartment house, flat, or tenement).....  
 Number of children in home between ages of 8 and 15 years.....; boys....., girls.....  
 Number of these in school.....; boys....., girls.....  
 Occupation of these children last summer.....  
 Income from their last summer's work.....; from gardens.....  
 Number of home gardens under school influence..... Amount of land that could be used for gardening.....sq. ft.  
 Estimate of value of vegetables and fruit that might be grown.....  
 Character of soil.....  
 Is any garden work done in this particular home?..... If so, who takes care of the garden?.....  
 Crops raised: Vegetables.....; fruits.....  
 The opportunity for small fruits—strawberries, dewberries, raspberries, currants, gooseberries, grapes.....  
 The number of fruit trees (apple, pear, peach, plum, cherry, quince, fig, etc.) that are grown.....; that could be grown.....  
 Number of horses.....; cows.....; chickens.....  
 Occupation of father.....; mother.....  
 Any other persons who contribute to support of home.....  
 Name of enumerator..... Address.....  
 (United States Bureau of Education).



**Cost of Vegetables for Family for One Year**

Information given by .....	
Street .....	No. ....
Number of persons in family .....	
Average daily cost of fresh vegetables .....	
Average daily cost of canned vegetables .....	
What part of fresh vegetables are purchased of grocers .....	
What part purchased at the farmers' market .....	
What part purchased of huckster selling at your home .....	
Average daily cost of berries including strawberries, blackberries, currants, etc., during the season local berries are on the market .....	
Average daily cost of berries including strawberries, blackberries, currants, etc., during the season that imported berries are sold .....	
How much is spent in one year for canned berries .....	

**Organization of Data**

Each field worker took rough notes concerning each of the points indicated in the various type study schedules and upon returning to the office, dictated a complete and detailed report of the day's work. These reports were typed in duplicate and filed in folders prepared for each occupational study. From these work-sheets a preliminary draft of each report was made. These preliminary reports were submitted to the various Conference Committees, after which they were re-edited and re-submitted, and then they were considered and approved by the Local and General Survey Committees.

# INDEX

## A

### AGRICULTURE IMPLEMENT MANUFACTURING,

	PAGE
habbitt metal worker.....	90
blacksmith.....	89
ensilage cutters.....	85
erector, assembler and tester.....	93
facts common to all workers.....	86
foreman of erectors and testers.....	92
foundry.....	89
machine shop.....	89
painters.....	94
woodworking operators.....	88
foundry workers.....	90
hay balers.....	85
machine operator.....	89
machinist.....	89
mechanical expert.....	87
occupations and number employed.....	85
painter.....	94
pattern maker.....	90
processes.....	81
sheet metal liner.....	90
Survey Committee Recommendations.....	95
threshers.....	81
tinner.....	91
tool maker.....	89
wood machine operators.....	88

### AUTOMOBILE FENDERS,

manufacture of.....	107
dippers and enamelers.....	108
sheet metal workers.....	107

### AUTOMOBILE INDUSTRY,

Survey Committee Recommendations.....	51, 52
---------------------------------------	--------

### AUTOMOBILES,

assembling.....	40
final.....	43
first.....	42
classifying parts.....	42
development.....	39
electrical equipment.....	43
growth of manufacture.....	39

**AUTOMOBILES—Continued.**

PAGE

inspection of parts.....	42
new models.....	42
occupations and number employed in manufacturing.....	44
painting.....	43
repair of.....	104
stages in manufacturing.....	40
testing.....	42, 43
value of output.....	40
woodworking.....	43

**AUTOMOBILE WORKERS.****SEE RAILROAD REPAIR SHOPS.**

blacksmith.....	51
educational requirements.....	44
electrician.....	50
final assembler.....	50
first assembler.....	45
hazards and character of work.....	45
machine operator.....	51
mental and physical requirements.....	44
painter.....	47
tester.....	51
upholsterer.....	48
woodworker.....	45

**B****BUILDING CONSTRUCTION.****SEE BUILDING TRADES.****BUILDING TRADES.**

bricklayer.....	183
carpenter.....	182
contractor.....	181
decorator.....	185
electric wireman.....	184
facts common to all workers.....	180
hoisting engineer.....	185
laborers.....	190
lather.....	185
occupations and number employed.....	179
painter.....	185
paper hanger.....	190
plasterer.....	187
plumber.....	188
sheet metal worker.....	189
steam fitter.....	188

<b>BUILDING TRADES—Continued.</b>	<b>PAGE</b>
stone cutter and mason.....	189
structural iron worker.....	189
Survey Committee Recommendations.....	191

C

<b>CABINET MAKERS,</b>	
assemblers.....	144
benchman .....	144
foreman cabinet.....	147
finishing department.....	144
machine operators .....	138
vencer.....	148
gluers.....	142
nature of employment.....	147
veneer workers.....	149
wood machine operators.....	138

<b>CABINET MAKING,</b>	
furniture and kitchen cabinets.....	136

**CABINET MAKING AND ALLIED TRADES.**

SEE MUSICAL INSTRUMENTS.

Survey Committee Recommendations.....	162
---------------------------------------	-----

**CAR REPAIR SHOPS,**

SEE RAILROAD REPAIR SHOPS.

car repairman and helpers.....	98
--------------------------------	----

**CASKET MAKERS,**

SEE CABINET MAKERS.

<b>CASKETS,</b>	
manufacture of.....	136
coverer and trimmer.....	160

<b>COMMERCIAL EMPLOYMENT,</b>	
review of Richmond.....	273

**COMMERCIAL EMPLOYMENT: OFFICE SERVICE.**

SEE OFFICE EMPLOYEES.

D

<b>DELIVERY SERVICE,</b>	
driver.....	363
errand boy.....	363
facts common to all workers.....	361
motor car operator.....	362
number engaged in.....	360

## DEPARTMENT STORE.

## SEE RETAIL STORES.

## PAGE

buyer .....	329
executive .....	329
facts common to all workers .....	327
salespersons .....	330

## DOMESTIC SERVANTS,

cook in private family .....	456
facts common to all workers .....	451
housemaid in institution .....	457
kitchen maid in institution .....	457
maid in private family .....	455
occupation and number employed .....	450
Survey Committee Recommendations .....	457

## DRY CLEANING,

deliveryman .....	253
facts common to all workers .....	243
hat cleaner .....	254
occupations and number employed .....	243
office girl .....	245
presser .....	251
proprietor or manager .....	244
spotter .....	250
Survey Committee Recommendations .....	255
the cleaner .....	246

## E

## EXPRESS COMPANY,

## SEE MERCANTILE TRAFFIC.

## F

## FIRE ESCAPES,

manufacture of .....	104
----------------------	-----

## FOUNDRIES,

## SEE METAL INDUSTRIES.

core makers .....	105
cupola tenders .....	107, 127
laborers .....	106, 128
moulders and helpers .....	107
pattern makers .....	106

## FREIGHT,

## SEE MERCANTILE TRAFFIC.

## FREIGHT CLASSIFICATION,

## SEE MERCANTILE TRAFFIC.

# INDEX

591

## FURNITURE,

SEE CABINET MAKING.

PAGE

manufacture of..... 136

occupations and number employed ..... 136

## G

### GASOLINE TANKS,

manufacture of..... 107

### GLOVE MANUFACTURING,

SEE GLOVE WORKERS.

product and characteristics ..... 196

### GLOVE WORKERS,

die cutter..... 211

former..... 227

glove stock girl..... 228

leather cutting foreman..... 211

packer..... 228

turner..... 226

### GREENHOUSE APPARATUS,

manufacture of..... 103

### GROCERY SALESMEN,

facts common to all workers..... 313

## II

### HOME AND SCHOOL GARDENING,

garden promotion of recent years..... 475

plan of organization..... 495

summary and conclusion..... 489

Survey Committee Recommendations..... 500

ten elementary schools..... 476

vacant lot and back yard gardens..... 478

### HOUSEHOLD EMPLOYMENT,

constant factors in the work..... 405

continuation courses..... 425

duties of the housewife..... 406

housewife and public health..... 417

knowledge required for..... 405

seasonableness of work..... 405

special knowledge and skill required..... 414

Survey Committee Recommendations..... 428

the housewife..... 405

variable factors in the work..... 420

## HOUSEHOLD SERVICE,

SEE DOMESTIC SERVANTS.

PAGE

## I

## INTERURBAN RAILROAD,

SEE MERCANTILE TRAFFIC.

## J

## JUVENILE EMPLOYMENT,

factory occupations.....	462
glove making occupations.....	462
number under seventeen years of age employed.....	464
offices.....	462
part-time complementary education.....	465
part-time education laws.....	466
stores.....	462
Survey Committee Recommendations.....	468

## L

## LADIES TAILORING AND DRESSMAKING,

dressmaker.....	235
facts common to all workers.....	234
occupations and number employed.....	234
seamstress.....	237
Survey Committee Recommendations.....	238

## LAUNDRY WORKERS,

deliveryman.....	271
facts common to all workers.....	258
foreman.....	260
hand ironer.....	270, 271
machine ironer.....	266-270
marker and sorter.....	261
occupations and number employed.....	258
office worker.....	260
starcher.....	265
Survey Committee Recommendations.....	272
washerman.....	263

## LAWN MOWER MANUFACTURING,

assembler.....	76
box maker.....	78
construction routine.....	67
drill press operator.....	75
facing and milling machine operator.....	75
facts common to all workers.....	71
foreman assembling.....	75
machine shop.....	73
forge worker.....	75
former.....	75

LAWN MOWER MANUFACTURING— <i>Continued.</i>	PAGE
grinder .....	74
inspector .....	78
machinist .....	74
occupations and number employed .....	70
painter .....	76
dipper .....	77
padder .....	76
stenciler .....	77
striper .....	76
pattern maker .....	73
punch press operator .....	75
reamer operator .....	75
Survey Committee Recommendations .....	78
tool maker .....	74

M

MACHINE TOOL MANUFACTURING,

SEE METAL INDUSTRIES.

draftsmen .....	101
machinists .....	101
apprentices .....	101
operators .....	101
tool makers .....	101

MANUFACTURERS,

SEE METAL INDUSTRIES.

MERCANTILE DELIVERY,

SEE DELIVERY SERVICE.

MERCANTILE SALES,

SEE RETAIL STORES; RETAIL SALESMEN.

Survey Committee Recommendations .....	368
--	-----

MERCANTILE TRAFFIC,

consumer .....	281
deliveryman .....	298
manufacturer .....	280
occupations and number employed .....	283
rate clerk .....	295
retail merchant .....	279
shipping clerk .....	291
Survey Committee Recommendations .....	305
traffic man .....	284



METAL INDUSTRIES,	PAGE
assembler.....	122
auto repairman.....	112
blacksmith.....	120
core makers.....	126
machine operator.....	114
machinist and helper.....	111
moulders.....	124
pattern maker.....	124
sheet metal workers.....	123
Survey Committee Recommendations.....	128
tool maker.....	119

MUSICAL INSTRUMENTS,	
action finishers.....	154
fly finishers.....	156
key makers.....	151
manufacture of.....	131
miscellaneous occupations.....	158
music roll cutters.....	159
phonographs.....	134
pianos.....	133

## N

NURSE,	
courses for practical nurse.....	447
graduate nurse.....	437
high school courses.....	445
home nurse.....	440
junior nurse.....	439
practical nurse.....	433
registration bureau.....	444
Survey Committee Recommendations.....	448
training of.....	443

## O

OFFICE EMPLOYEES,	
bookkeeper.....	391
cashier.....	394
clerk.....	397
cost clerk.....	398
occupations and number employed in various offices.....	386, 387
stenographer.....	388
Survey Committee Recommendations.....	403
training for office service.....	400

## P

PARCEL POST,

SEE MERCANTILE TRAFFIC.

PIANOS,

SEE MUSICAL INSTRUMENTS.

PAGE

PRINTERS,

apprentices .....	169
compositors .....	168

PRINTING TRADES,

bindery operator .....	174
characteristics of .....	163
cutting machine operator .....	174
facts common to all workers .....	167
foreman compositor .....	167
press .....	170
occupations and number employed .....	165
press feeder .....	173
pressman .....	170, 171
apprentice .....	173
Survey Committee Recommendations .....	175

R

RAILROAD REPAIR SHOPS,

assistant shop clerk .....	98
blacksmith .....	98, 120
boiler inspector .....	98
boiler maker .....	98, 116
carpenter .....	118
car repairman .....	117
electrician .....	98
engineer .....	98
fireman .....	98
foreman engine house .....	98, 116
head hostler .....	98
head machinist .....	98
hostler .....	98
inspector .....	98
laborer .....	98, 118
machinist .....	98
helper .....	98
master mechanic .....	98
shop clerk .....	98
store keeper .....	98

RAILROADS,

SEE MERCANTILE TRAFFIC.

RETAIL SALESMEN,

display work .....	316
number of salespersons employed .....	310
special work .....	317

## RETAIL STORES.

	SEE MERCANTILE SALES.	PAGE
book and stationery . . . . .		353
salesperson . . . . .		354
cigar and tobacco store . . . . .		324
salesman . . . . .		324
soda fountain clerk . . . . .		325
confectionery . . . . .		320
salesman . . . . .		320
department store . . . . .		325
drug store . . . . .		322
pharmacist . . . . .		322
salesman . . . . .		323
soda fountain clerk . . . . .		322
dry goods, notions and furnishing stores . . . . .		325
five and ten cent store . . . . .		340
facts common to all workers . . . . .		341
salesperson . . . . .		341
stock man . . . . .		342
florist's shop . . . . .		351
salesman . . . . .		351
furniture store . . . . .		343
facts common to all workers . . . . .		343
repairmen . . . . .		347
special workers . . . . .		346
grocery store . . . . .		312
hardware store . . . . .		355
facts common to all workers . . . . .		356
salesman . . . . .		357
jewelry store . . . . .		349
salesman . . . . .		349
meat shop . . . . .		318
salesman . . . . .		318
men's furnishings . . . . .		334
salesman . . . . .		335
millinery store . . . . .		336
facts common to all workers . . . . .		338
hat maker . . . . .		339
head trimmer . . . . .		338
salesperson . . . . .		340
shoe store . . . . .		331
salesman . . . . .		331
type of stores . . . . .		310

## RICHMOND,

commercial center . . . . .	17
educational center . . . . .	18
general characteristics . . . . .	15
manufacturing center . . . . .	18
newspapers . . . . .	20

<b>RICHMOND—Continued.</b>	<b>PAGE</b>
population.....	15
composition of .....	16, 17
schools, evolution of .....	3
<b>RICHMOND INDUSTRIES,</b>	
employees, age groups.....	24, 28
age leaving school.....	26, 32
conjugal condition.....	25, 29
courses taken since leaving school.....	26, 37
education.....	25, 30, 31
hours of work.....	26, 33
other occupations followed.....	26, 36
place of birth.....	24, 27
wages.....	26, 34
years of experience.....	26, 35
importance of.....	23
industrial employment.....	24
<b>ROLLER SKATES,</b>	
manufacture of.....	103

## S

<b>SALESMEN,</b>	
constant factors in salesmanship.....	365
suggestions for training for salesmanship.....	366
training for salesmanship.....	363
variable factors in salesmanship.....	364

## SALESMEN AND SALESPERSONS,

SEE RETAIL SALESMEN.

## STORES,

SEE RETAIL STORES.

## SURVEY,

agreement to make.....	5
general method.....	7
methods and forms used.....	569
organization of.....	4
personnel.....	9-13
procedure.....	8
purpose.....	7
reasons for.....	3

## T

## TELEPHONE SERVICE,

chief operator.....	378
facts common to all workers.....	370
farm operator.....	374
night operator.....	377

<b>TELEPHONE SERVICE—<i>Continued.</i></b>	<b>PAGE</b>
Survey Committee Recommendations.....	383
toll department.....	371
facts common to all toll operators.....	372
toll line operator.....	375
toll recording operator.....	375
trouble clerk.....	379
 <b>TEXTILE MANUFACTURING,</b>	
facts common to all workers.....	200
occupations and number employed.....	199
Survey Committee Recommendations.....	230
underwear industry.....	193
 <b>TEXTILE WORKERS,</b>	
bundler.....	229
folder.....	226
foreman knitting department.....	203
marking and cutting department.....	206
spooling department.....	201
forewoman sewing.....	213
inspector.....	225
knife cutter.....	209
knitting machine operator.....	204
labeler.....	230
markers.....	206
presser.....	226
sewing machine operators.....	214-225
spooling machine operator.....	202
spreaders.....	208
 <b>TRACK DERAILERS,</b>	
manufacture of.....	101
 <b>TRANSPORTATION,</b>	
SEE MERCANTILE TRAFFIC.	
 <b>TRUCKS,</b>	
manufacture of.....	104
V	
 <b>VENTILATING APPARATUS,</b>	
manufacture of.....	103
 <b>VOCATIONAL EDUCATION.</b>	
elementary schools.....	507
high school.....	515
night school.....	535
present provisions.....	507
Survey Committee Recommendations.....	545

## INDEX

599

### W

PAGE

#### WHOLESALE STORES AND JOBBERS,

dry goods.....	358
salesmen.....	359
hardware.....	355
salesmen.....	355, 358

#### WIRE FENCE MANUFACTURING,

checker.....	63
craneman.....	64
electric welder.....	62
foreman, warehouse.....	65
weaving department.....	59
industry in Richmond.....	53
inspector.....	62
helper.....	63
laborer.....	63
loom operator.....	60
helper.....	61
machinist.....	61
occupations and number employed.....	57
sealer.....	64
stockkeeper.....	65
Survey Committee Recommendations.....	65
value of production.....	53

#### WORKINGMEN'S WEAR INDUSTRY,

SEE GLOVE WORKERS; TEXTILE WORKERS.

products and characteristics.....	197
-----------------------------------	-----

379.75 .R531 C.1  
Report of the Richmond, Indian  
Stanford University Libraries



3 6105 033 464 681

1975

10M-6-48

R53

579.75  
R531

NOV 30 1946  
BINDER DEC 30

# COWLEY

647985



